PRODUCTS finishing

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PRODUCTS finishing

Mr. Beaver is back again - - -

In the early history of PRODUCTS FINISHING, a thorough search was made for authorities in the field of metal finishing with the object of enlisting their talents to the end that the best possible editorial material might be obtained on subjects pertinent to this field. Among those who were added to the staff of contributing editors was H. Leroy Beaver, whose lifelong research on the subject of barrel finishing fully qualified him as an outstanding authority. We admit that we considered ourselves most fortunate when Mr. Beaver consented to write a series of articles devoted to the barrel finishing of metal products. The publication of his series elicited many inquiries for additional information, indicating that barrel finishing was not only a "live" subject, but one that is highly important to the industry as well.

Mr. Beaver's series ended several years ago and yet rarely a month passes in which we do not receive numerous requests for information on Mr. Beaver's favorite subject. This continuing keen interest, plus the fact that new techniques and equipment for the barrel finisher have been developed in recent years, induced us once again to contact Mr. Beaver for the purpose of persuading him to write another series.

It is with pleasure that we now announce to the readers of PRODUCTS FINISHING that Mr. Beaver has consented to supply some more material on this subject. Beginning with this issue an article under the heading "Barrel Finishing of Metal Products" will appear each month.

In presenting this material, Mr. Beaver will draw upon his many years of practical experience and intensive research. It is our hope that the answers to problems confronting you in the barrel finishing department may be found in these articles. If not, we extend to you an invitation to write directly to PRODUCTS FINISHING. You may rest assured that every effort will be made to find an answer and that each inquiry will be given thorough and prompt attention.

New building of the Chemical Plating Company at Stratford, Connecticut

New Plating Installation Features Gas-Fired Immersion Heaters

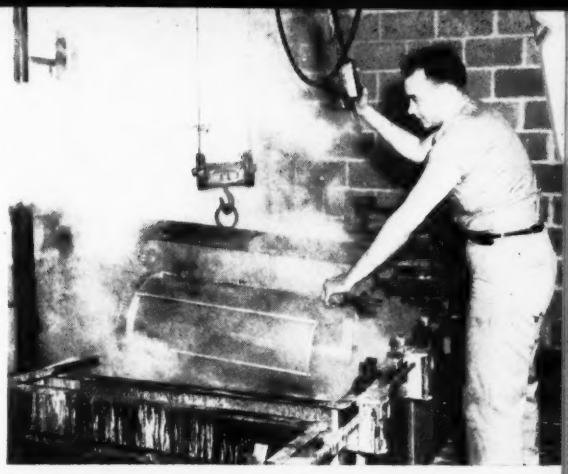
By ARTHUR Q. SMITH

American Gas Association

WHEN the Chemical Plating Company moved into its new building in Stratford, Connecticut, during June 1946, considerable new automatic electroplating machinery was installed, as well as specially designed cleaning and washing tanks in which the solutions are heated by means of gas-fired immersion burners. These are all atmospheric immersion burners having a rated input of 400,000 B. T. U. each.

The company was established just two years ago as a job plating business, which in this short time outgrew its former shop and necessitated a new plant to accommodate the large demands for plating small parts. An endless variety of items by the thousands passes through the company's plant, which is equipped to do plating in brass, copper, zinc, cadimium, tin, nickel, and chrome.

In its former shop, the company had a four-barrel plating unit with which it was able to turn out about 1,700 pounds per day. Here in the new plant with only a three-barrel automatic

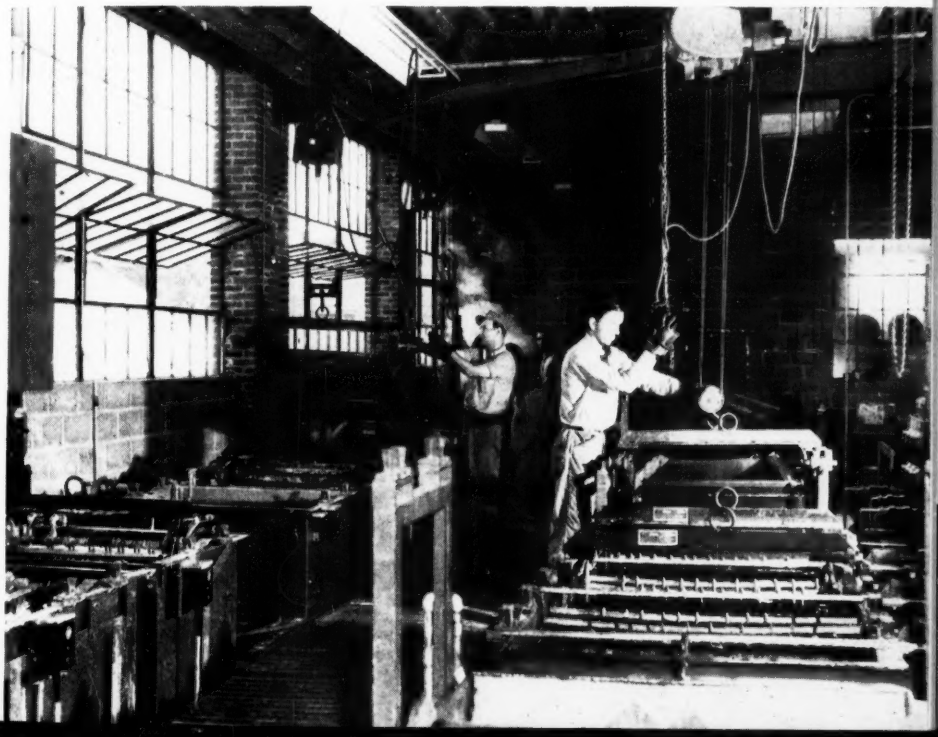


A plastic barrel with a charge of small parts at Chemical Plating Company, Stratford, Connecticut, being lowered into hot alkaline bath heated by gas-fired immersion burner

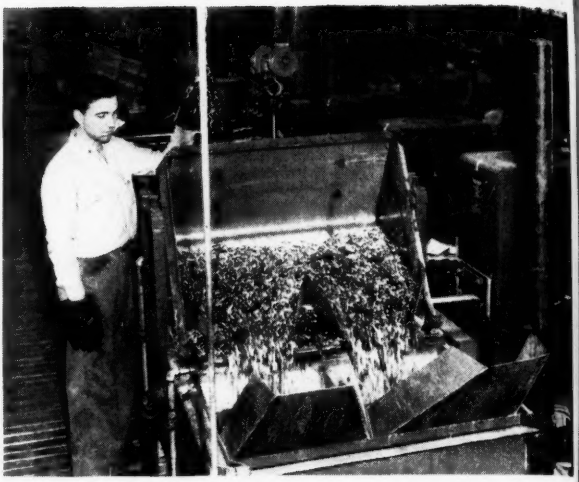
unit and the gas-fired immersion heaters on the cleaning and washing tanks, the firm has been able to step up production to 2,500 pounds per day—a considerable increase in volume and a consequent reduction in unit cost.

The plating operations are performed in a large airy room which is open on two sides, thus providing ample ventilation and good light. Most of the small parts plating is done in the automatic barrels which are made of a perforated plastic and have adapters on each end which engage in a fitting on a common shaft when they are placed in the various tanks and rotated continuously while in the tanks. The first step in the plating process is to thoroughly clean the parts in an alkaline solution to remove all traces of grease and foreign matter which may affect the plating. This first alka-

The automatic barrel plating section at Chemical Plating Company, Stratford, Connecticut



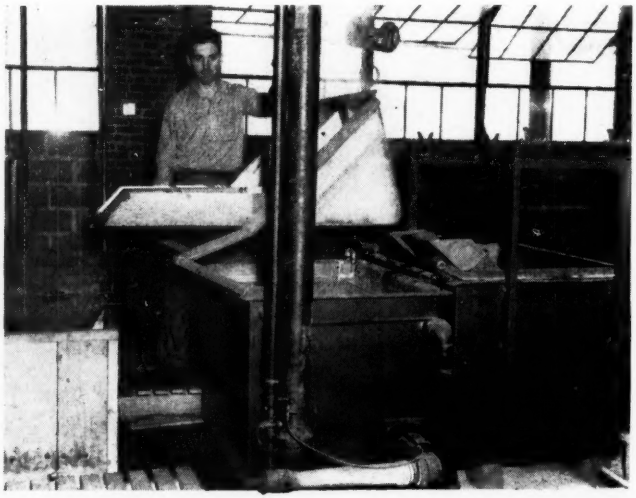
Plated parts being dumped into final hot rinse



line bath is kept at boiling temperature by a gas-fired immersion heater. The next tank is a hot water rinse, from where the parts are passed onto a secondary wash and rinse in which all tanks are fitted with immersion burners that keep the solutions boiling. After thorough cleaning, the barrels loaded with parts to be plated are picked up on an overhead conveyor and placed in the particular tank for plating as required on that part.

When the barrels have been in their respective plating baths for the prescribed time to acquire the proper thickness of plate on parts, they are conveyed to successive hot rinsing baths, also heated by means of gas-fired immersion burners to the boiling point. From the final wash, the parts are placed in centrifugal dryers and, in certain instances, further dried in sawdust. When a high polish is desired, as in the case of nickel and chrome plates, the parts are polished in tumblers.

Parts that are too large or of such a nature that it is impractical to use the automatic barrel, processing is done



From the final hot rinse the plated parts are transferred to centrifugal driers. The gas-fired immersion burner to heat the bath may be seen at the bottom of the tank.

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Drying sawdust is shaken from these nickel plated belt buckles at Chemical Plating Company, Stratford, Connecticut.

in "still" tanks where the parts are either placed in baskets or hung on individual hooks. In the "still" plating section, the same cleaning and washing takes place as in the automatic barrel processing, and the hot tanks in this section are also heated by gas-fired immersion burners to boiling temperature.

Installation of unit space heaters is proceeding to provide heat for the plant

A general view of the "still" plating section where parts too large for the automatic machines are hung in the plating and washing baths individually. Steam can be seen rising from the hot baths which are heated by gas-fired immersion burners.

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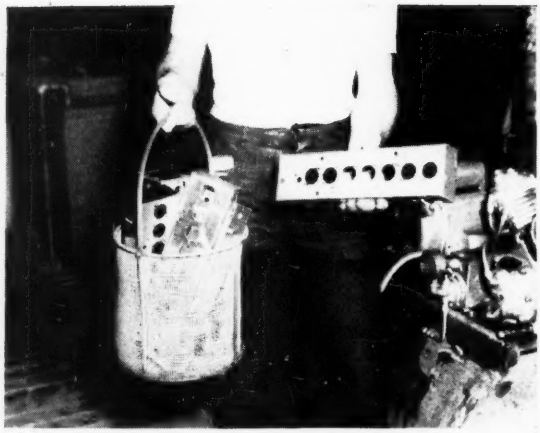


Parts too large for the automatic barrels are plated separately. Here at Chemical Plating Company, Stratford, Connecticut, are cadmium plated radio parts.

•

during the winter months. Products of combustion from the immersion heaters are piped to outdoors, and the ventilating system provides many air changes and a clear atmosphere for workmen.

The plant of the Chemical Plating Company, while small, is a model of efficiency and cleanliness due in a large measure to the gas-fired equipment for processing and space heating.

Nickel Plating on Steel by Chemical Reduction

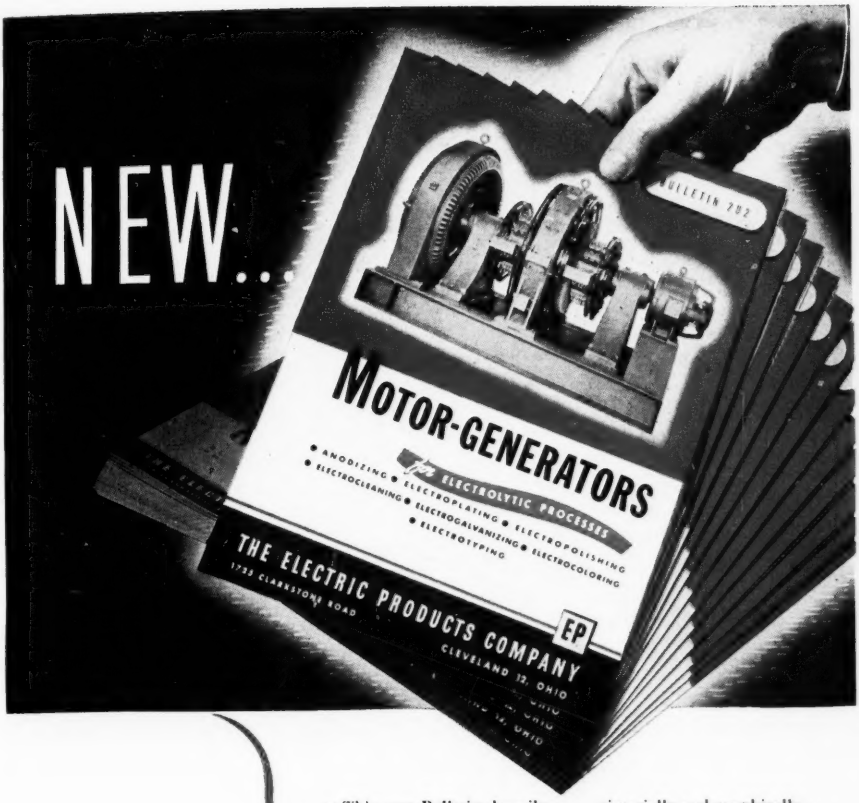
UP to the present time, nickel coatings on steel have been obtained from aqueous solutions of nickel salts only by electrodeposition. A new process, however, which was developed by Abner Brenner and Grace E. Riddell of the National Bureau of Standards' Electrochemistry Section, produces nickel deposits, of good quality, on steel without the use of an electric current.

The deposition of nickel is brought about by chemical reduction of a nickel salt with hypophosphite in a hot ammoniacal solution. The reaction is catalytic and under the prescribed conditions of concentration and pH, no reduction occurs in the solution unless certain metals, such as steel or nickel, are introduced into the bath. The reduction then occurs only at the surface of the immersed metal with the production of a coating of nickel of 96 to 97 per cent purity.

One liter of a typical plating bath contains 30 grams of nickel chloride ($NiCl_2.6H_2O$); 10 grams of sodium hypophosphite; 50 grams of ammonium chloride; 100 grams of sodium citrate; and ammonium hydroxide to give a pH of 8 to 9. The bath is operated at a temperature of 90 deg. C. About 0.00025 inch of nickel is deposited per hour, and thick deposits can be built up by long immersion. Since the hypophosphite is decomposed by the reaction, it must be replenished at intervals.

The chemical reduction method of plating nickel on steel is too expensive to displace electrodeposition of nickel because of the cost of the hypophosphite. However, it may find use in special applications, for example, plating small lots of steel parts which cannot be plated economically in a plating barrel. Since problems of current distribution are not involved in this process as in electroplating, it may be used for plating nickel in recesses that cannot be plated readily by electrodeposition.

—Technical News Bulletin No. 351



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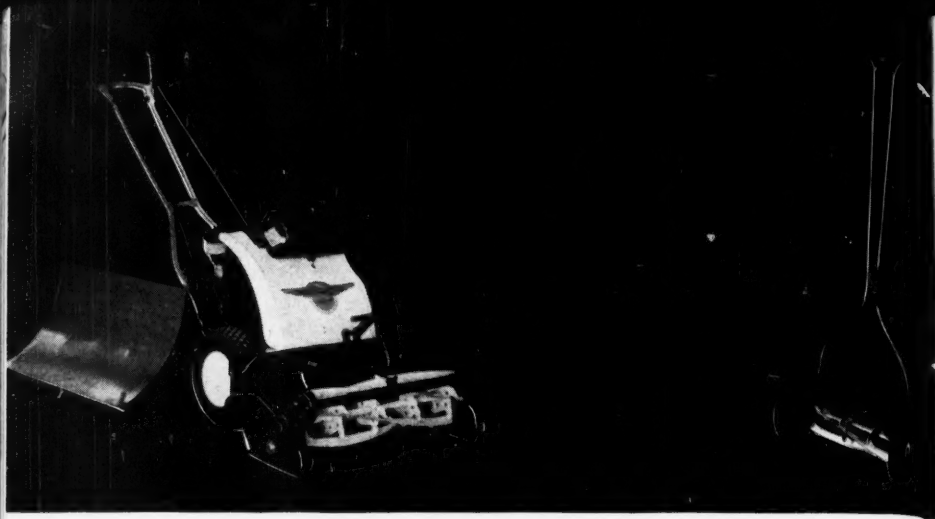

By BRYANT W. POCOCK

REO MOTORS, INC., of Lansing, Michigan, is the manufacturer of the Michigan Noiseless lawn mower, a hand-operated machine, and its power-driven counterpart, the 1-horsepower Trimalawn, as shown in Fig 1. Both these machines are strictly of the postwar era and embody several unique features, not the least among which are an accessory snow plow for the power model and a self-aligning easily detachable handle for the hand mower. How the various parts for these machines are prepared for finishing and finished comprises a most interesting story.

Reo's chief metallurgist, C. W. Hangosky, inventor of the Cenco-Hangosky electrolytic polishing machine, has produced evidence which indicates that an extremely fine crystalline structure is produced in Bonderizing or Parkerizing if the part is first immersed in No. 35 Pennsalt, which is essentially an alkali plus a wetting agent. Consequently, mower reel assemblies about to be Bonderized at Reo undergo preliminary immersion for 2 to 3 minutes in a 4 oz./gal, concentraion of this salt at 180 to 200 deg. F. in a steel tank, as shown in Fig. 2. This is followed by immersion for the same period of time in water held at 180 deg. F., the tank continuously overflowing, and this by Bonderizing or Parkerizing as the case may be.

If the parts are to be Bonderized in preparation for painting, as is the case with mower reels, Bonderite solution is used at 20 points concentration and at a temperature of from 180 to 210 deg. F. Immersion may vary from 30 seconds to 3 minutes for routine passes through this bath, depending on what parts are being Bonderized. Over a period of time a sludge formation is produced, consisting of a flocculent, white precipitate, which has to be removed in order to maintain the efficiency of the bath. This is done by allowing the precipitate to settle and siphoning out the supernatant solution. The sludge at the bottom of the tank is simply shoveled out. Normally about 3 inches of sludge is

Fig. 1—(Above) Reo's Trimalawn power mower and Michigan Noiseless lawn mower

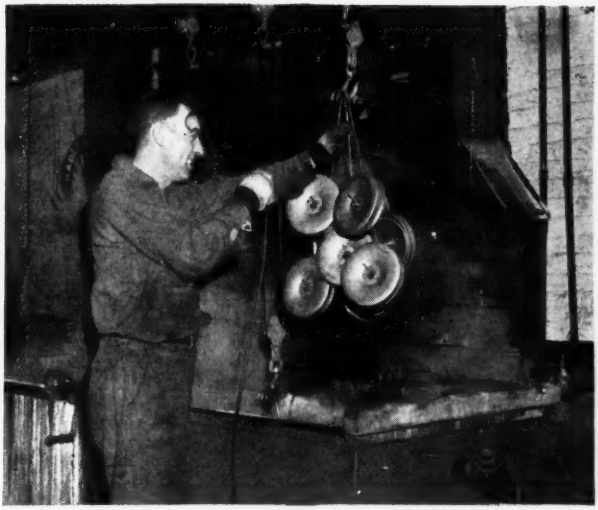

Fig. 2 — Reo operator about to Bonderize lawn mower wheels. Parts are shown being immersed for preliminary treatment in Pennsalt.

found on the bottom every 3 weeks. The tank used has a capacity of 300 gallons.

The original Bonderizing bath is made up in this tank by using 150 pounds of Parker's "D-180" make-up chemical. Sodium nitrite, $NaNO_2$, is used at a strength of 3 oz. for 300 gallons of solution as an accelerator. When laboratory analysis indicates that the bath must be replenished, "D-180" replenisher is added in sufficient quantity to bring the acidity back to 20 points. During replenishing, the sodium nitrite must be replenished also, the amount being controlled by titration with potassium permanganate. On an average, about 1.5 oz. of sodium nitrite must be added daily.

Every 3 weeks after the sludge is removed from the Bonderizing tank, more "D-180" make-up chemical must be added to compensate for that lost during sludge removal.

In cases where parts are to be Parkerized instead of Bonderized, an 80-gallon tank is used. The bath in this tank

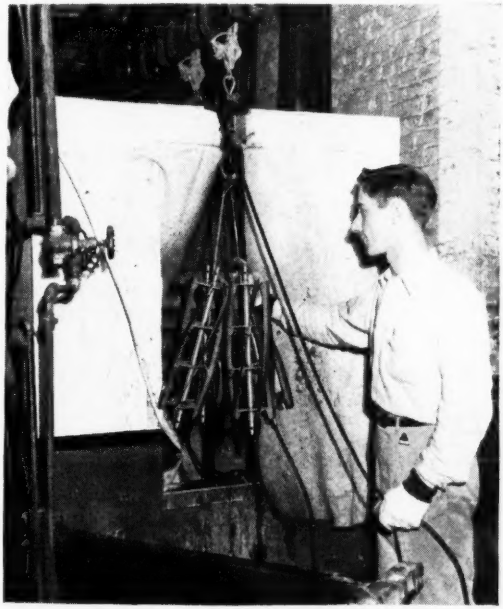

Fig. 3—Reo operator starting Bonderized mower reels through circulating type steam-fired oven. This operation follows chromic acid rinse.

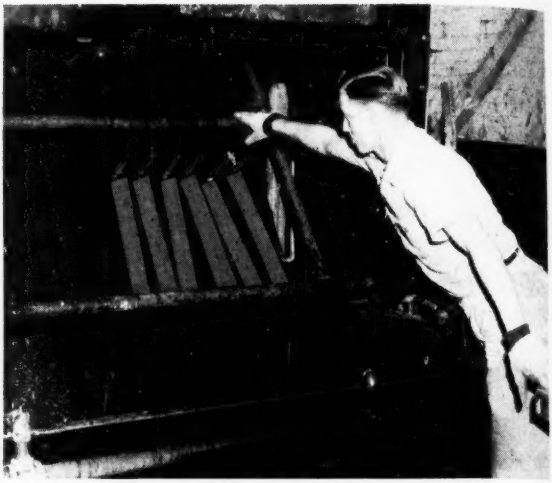

Fig. 4—Reo operator at green enamel dip tank where cutter blades are dipped and started on their way through baking oven

is made up originally by using 56 pounds of "Parco" make-up chemical for the 80 gallons of solution. In use, the bath is maintained at a temperature of from 190 to 210 deg. F. Concentration of the bath is 30 points, held constant by periodic analysis and additions of "Parco" replenisher. "Parco" make-up chemical is added from time to time upon recommendation of the materials laboratory, sludge being formed in this tank also. The sludge is infrequently removed from the Parkerizing tank, as the steam heating coils have to be taken out and replaced, due to the heavy deposit of scale which forms on them. An investigation is being conducted at the present time to determine the best way of eliminating this difficulty. The same titrations are used in analysis as in the case of Bonderite.

After the reels have gone through the Bonderizing solution, they are rinsed in cold water. They are then immersed in chromic acid at a temperature of from 180 to 200 deg. F. for a maximum of 30 seconds. The bath used is Parcolene acid rinse, which is essentially a mixture of chromic and phosphoric acids. The purpose of this rinse is

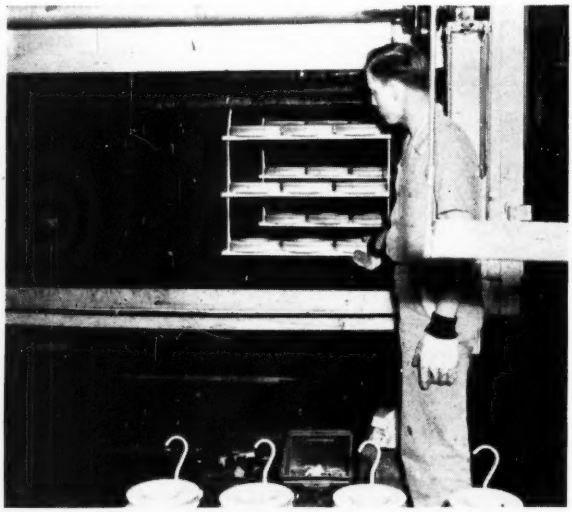

Fig. 5—Reo operator removing mower wheels emerging from baking oven after enameling

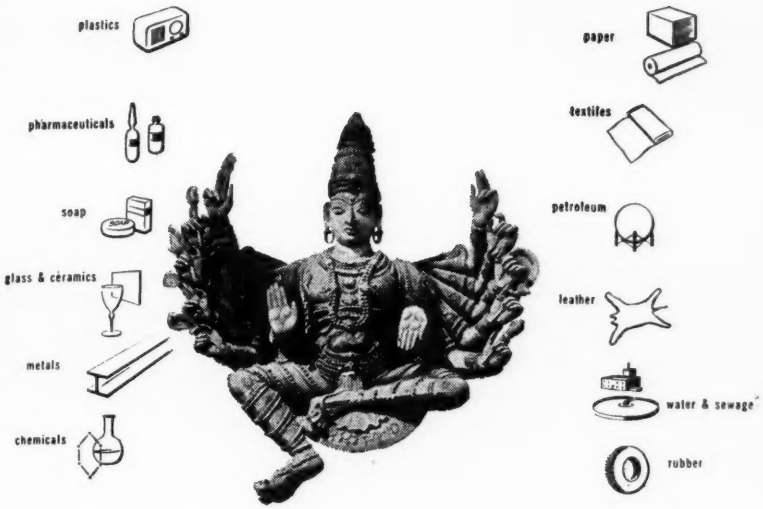

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Fig 6 — Reo operator lapping mower cutting reels against their own lower blade cutters, using No. 200 mesh Carborundum compound

primarily removal of excess Bonderizing salts. Duration is held under 30 seconds, as too long an acid rinse would detract from the quality of the Bonderized coating itself. Concentration of this bath is 36 oz. for 300 gals.

Laboratory control of the acid rinse includes determinations of both chromic acid and total acid. Titration is against 0.1 N. sodium hydroxide with brom cresol green to a bright green end point for chromic acid, then with added phenolphathalein to a second (purple) end point for total acidity.

Over a period of time, drag-over from the Bonderizing bath produces a gradual build-up of acidity in the Parcolene, despite the intervening cold water rinse. Specifications limit build-up of chromic acid to from 0.5 to 2.5 points and of total acidity to 7.5 points. Inasmuch as there occurs in practice a more rapid build-up of phosphoric than of chromic acid, resulting in a lower ratio of chromic to phosphoric acid as total acidity rises with repeated drag-over, Parcolene must be added occasionally to correct the ratio of the two acids. This, however, is a slow build-up, and total acidity does not approach an increase of 7.5 points for a long time. When it arrives at this value, the solution is discarded and replaced.

Chromic acid rinse is followed by passage through a drying chamber consisting of a circulating type hot steam heater, as shown in Fig. 3. The mower reels are then tabled and their shaft ends masked off preparatory to painting. Figure 4 shows a view of a green enamel dip tank where cutter blades are dipped and then placed on a baking oven conveyor.

Masked reels are sprayed in a water-washed spray booth with a cream-colored synthetic alkyd type high-gloss baking enamel. It is felt at Reo that although a high gloss is desired in the finished part, there is no type of glossmeter yet available which will satisfactorily measure exactly the kind of gloss under consideration. Hence, no meter is used, although one undoubtedly will be when the right type is available. An average figure of 85 gloss would be about the reading obtained on a 60-degree glossmeter. The finished reels are shown being removed from a baking oven in Fig 5.

Holes in previously Bonderized end frames are now masked and the latter dipped in green enamel, followed by a medium bake. High gloss is also

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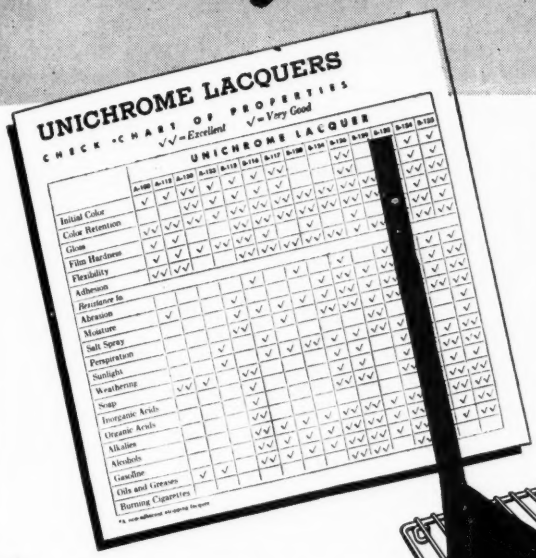

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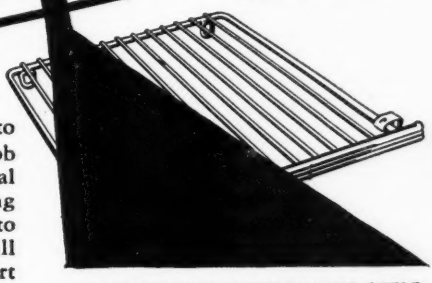

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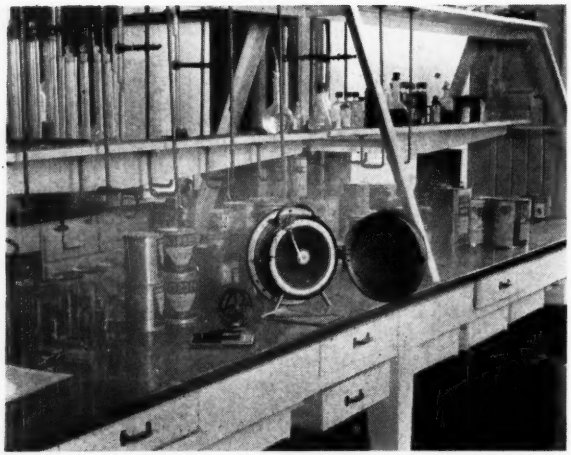

Fig. 7—View of Reo's materials laboratory, paint testing section. At center on table, left to right, are Pfund cryptometer for hiding power determinations, Sward rocker for hardness determinations, and Bristol recorder for use in recording temperatures in drying ovens.

required of this enamel. Baking takes 18 minutes at 300 deg. F. in a convection type gas-fired baking oven. Reels are then hooked on the monorail conveyor and allowed to cool until tack-free. Bushings and other assemblies are then installed.

Mower cutting reels are lapped against their own lower blade cutters as shown in Fig. 6 using No. 200 mesh Carborundum grinding compound.

Mower handles are primed in a synthetic low-gloss alkyd type baking primer, then double dipped in "85 gloss." Baking is done at from 265 to 275 deg. F. during a 30-minute monorail travel through a conveyorized, convection type gas-fired baking oven. Figure 7 shows the Bristol recorder—the instrument on the right with the hinged door—which is placed on the conveyor and passed through the oven in order to obtain records of the temperature throughout its full length. This instrument is actually a recording time clock lined with asbestos and built to withstand temperatures up to 500 deg. F. Inasmuch as no ink could be used at these temperatures, a pen point is made to leave its tracing on a smoked chart which makes a complete revolution in 1 hour. The chart is rendered permanent by immersion in a proprietary clear lacquer.

Hardness of paint films is checked in Reo's materials laboratories with the aid of a Sward hardness rocker.* This ingenious device, as shown at the left in Fig. 7, makes use of the swinging beam principle, yet requires

* Gardner, Henry A., D.Sc., "Physical and Chemical Examination of Paints, Varnishes, Lacquers and Colors," Ninth edition, second printing, p. 117; Institute of Paint and Varnish Research, 1500 Rhode Island Ave., N.W., Washington, D. C., Oct. 1, 1940. A tenth edition of this monumental work is now available.

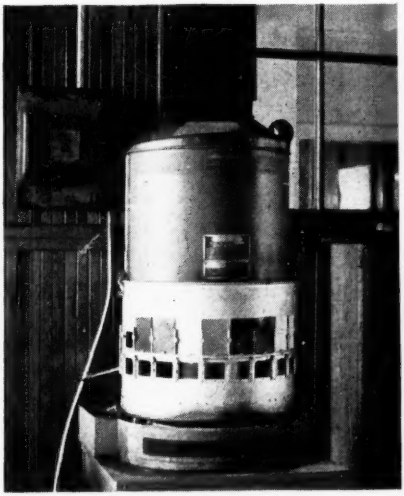

Fig. 8—Reo's installation of Age-Ometer, instrument for conducting accelerated weathering tests on laboratory paint panels with aid of ultraviolet light, heat and water

You can save HOURS in finishing metal parts...

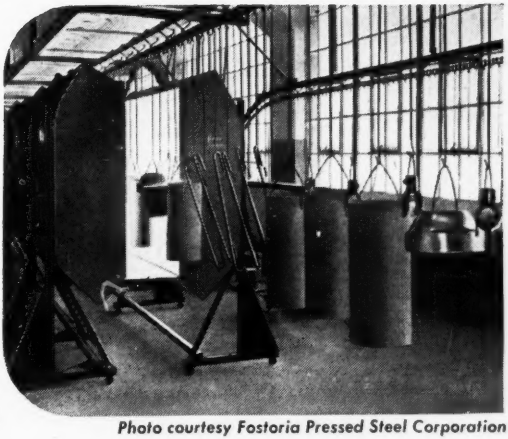

Photo courtesy Fostoria Pressed Steel Corporation

with *INFRA-RED!*

Smooth and wrinkle finishes baked on ...clear lacquer and varnish dried over chromium plating... these are just a few of the jobs done *faster* with Infra-Red, in the vacuum cleaner plant installation shown.

You'll find that *you* can save time, cost and *space* in drying finishes on metal parts by using Infra-Red. Drying is *more uniform,* too... workmanship is better, rejects are fewer.

A further advantage: operation is visible at all times, allowing continuous inspection if desired.

FOR BEST RESULTS WITH INFRA-RED

come to the company that's first in the field! Wabash developed the special tungsten filament that provides *uniform* distribution of radiant energy — at the best wave lengths for the purpose. Wabash locks every lamp with the famous "Superlök" base, which the most terrific tunnel temperatures cannot loosen. And Wabash is ready to help you engineer each job.

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WABASH *FIRST IN INFRA-RED*

SYLVANIA ELECTRIC

Rec. Rept. No.	REO MOTORS, INC.	Laboratory No.
Pur. Order No.	MATERIALS LABORATORY ANALYSES	R.M.S. No.
Vendor	For	Color
Amount Recd.	PRIMERS - THINNERS - ENAMELS	Vendor's Batch No.

Date Shipped	Type of Material	Disposition
Date Received		
Date Tested		Sig.

	Thinners
1. Color	
2. Acidity	
3. Appearance (Turbid - Clear - Suspended Matter)	
4. Spot Test	
5. Flash Point	
6. Corrosion Test	
7. Mixed Aniline Point	
8. Composition - a. Aromatic Hydrocarbons (Xylene)	
b. Naphthenic Hydrocarbons	
c. Petroleum Hydrocarbons	
9. Distillation First Drop	
50% Point	
90% Point	
Dry Point	

	Primers		Enamels	
1. Color				
2. Odor				
3. Viscosity of Package Material	#4 Ford Cup		#4 Ford Cup	
4. Viscosity of Reduced Material: % Reduction	#4 Ford Cup		#4 Ford Cup	
5. Flash Point of Package Material	°F.		°F.	
6. Settling Test of Package Material as Received				
7. Settling Test of Package Material After 10 Days				
8. Hiding Power	m.m. Pfund Cryp.		m.m. Pfund Cryp.	
9. Total Solids	%		%	
10. Total Volatile Material	%		%	
11. Total Non-Volatile Vehicle	%		%	
12. Pigment Volume	%		%	
13. Moisture Content	%		%	
14. Coarse Particles	%		%	
15. Phthalic Anhydride, % in Resin	%		%	
16. Rosin Test	Pos.	Neg.	Pos.	Neg.
17. Phenolic Compound Test	Pos.	Neg.	Pos.	Neg.
18. Spraying Properties @ % Reduction				
19 Hardness 1 Hour after Bake		S.R.H.		S.R.H.
" 24 Hours " "		S.R.H.		S.R.H.
" 72 Hours " "		S.R.H.		S.R.H.
20. Film Thickness Per Spray Coats				
21. Baking Conditions	Min.	°F.	Min.	°F.
22. Gloss		@ 60°		@ 60°
23. 180° Bend Test 24 Hours after Baking				
24. 180° Bend Test 24 Hours after Water Immersion				
25. Immersion Tests on System Panels				
a. Gasoline - 16 Hours at Room Temp.				
b. Water - 96 Hours at Room Temp.				
26. Salt Spray Tests				
27. Weather-Ometer Exposure				
28. Florida Panel Exposure				
29. Adhesion after 72 Hours Air Dry After Bake				
30. Bleeding Properties				

Remarks:

Fig. 9—Materials laboratory report form used at Reo for recording analyses of primers, thinners and enamels

no separate scale or level, a circular level being built into its bottom. Two flat, chromium-plated, 4-inch bronze rings are spaced 1 inch apart. Two tube levels indicate amplitudes of swings.

A paint or enamel film whose hardness is to be estimated is applied on a plate glass surface. After the film has dried, the rocker is placed on the film, leveled, and set in motion. The number of complete swings is multiplied by 2 and termed the Sward Rocker

means combinations of colors, too!

Wrinkle coatings are available in any colors you want—in primary colors, tints, pastels and *combination* effects for unusual eye appeal. Wrinkle versatility doesn't stop there. Users find, for example, that Wrinkle is used on *flexible* materials with the same success as on metal or similar surfaces.

Wrinkle is economical to use, requiring only one top coat. It covers imperfections in castings and weldments without extensive clean-up necessary with smooth finishes. Wrinkle protects while it enhances the beauty of coated surfaces. It doesn't chip or peel and is extremely durable even under adverse conditions.

Approximately 200 leading paint and varnish plants which manufacture Wrinkle under our license can supply you with Wrinkle coatings in a variety of textures, patterns, and colors to suit your needs.

Write for "New Wrinkles in Finishing," a bi-monthly report on developments in the Wrinkle field.

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Wrinkle
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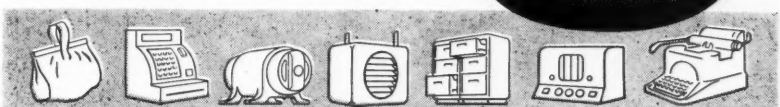


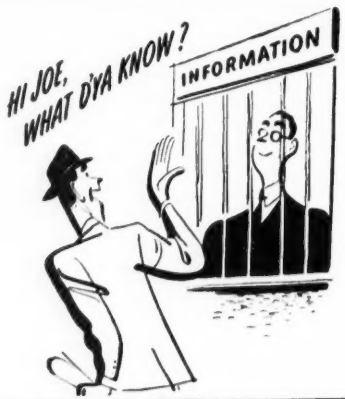
Hardness Value. Hardness is usually recorded as Rocker value, although corresponding time may be used if desired. The rocker is calibrated on polished plate glass by adjusting it to produce 50 oscillations on glass. This corresponds to a Rocker hardness of 100 and is used as a standard, all subsequent measurements being relative to glass.

Figure 8 shows a view of an Atlas Electric Devices Co. Age-Ometer. This instrument is used in conducting accelerated weathering tests on laboratory paint panels with the aid of ultraviolet light, heat, and water.

Thickness of paint films is measured by means of a General Electric Type B thickness gage, an electronic instrument scaled to thicknesses between 0.000 and 0.100 inch. Hiding power is estimated in square feet per gallon by use of a Pfund cryptometer. Figure 9 shows the type of record used at Reo for analysis reports on primers, thinners, and enamels. This form, one of the most complete in existence, is a model of good layout and excellent laboratory practice.

Rollers for Reo's lawn mowers are turned from various types of hardwood. In Reo's extensive roller department rollers are dipped at room temperature in a toxic sealer to a penetration of ¼ inch in 5 minutes, 1½ to 2 inches at the ends (along the grain). This treatment prevents decay from wood rot and aids materially in promoting long life. Final treatment consists of immersion in clear lacquer.

In the last analysis, the degree of success which will reward Reo's new venture will be determined in large measure by the adequacy of control which is exercised in all phases of mower fabrication. As far as the finishing phases are concerned, Reo may feel justly proud.



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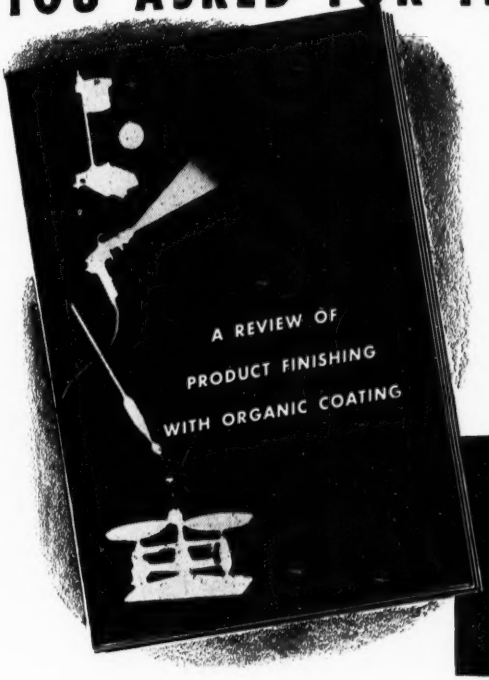

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Finishing Clinic

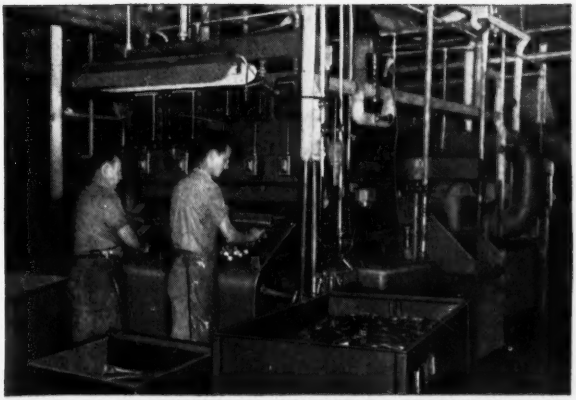
New Plastic Coating Method Employs Gel Lacquers

OF interest to finishing engineers is a new way to apply a durable "Plastic Veneer" by dipping articles in a gel-forming cellulose-ester lacquer, whereby coatings can be obtained ten times as thick as by ordinary dipping methods, giving the appearance of solid plastic. Gelation of lacquer at a temperature intermediate between dipping temperature and room temperature to give a heavy uniform coating is the basic characteristic of this new application method described to the Division of Paint, Varnish, and Plastics Chemistry at the Spring American Chemical Society Meeting by C. J. Malm and H. L. Smith, Jr., of the Eastman Kodak Company.

The coating thus obtained is in reality a "Plastic Veneer." A wood, metal, or paper article so coated looks and feels like solid plastic. In addition, surface imperfections of the core material are effectively hidden. Moreover, the method provides decorative finish to articles molded from plastic scrap of assorted colors or from low pressure laminates. The technique has numerous advantages, the most obvious of which is the thickness of coating deposited—up to 0.015 inch of dried lacquer per dip. The coating applied by gel lacquering is reportedly smooth, glossy, and highly decorative, with low heat conductivity which gives it a plastic feel.

The method has been successfully employed using a variety of cellulose acetate-propionate and acetate-butyrate esters. One of the most successful esters for gel lacquer has been

MIGHTY NICE WHEN YOU CUT LABOR COSTS BY TWO-THIRDS



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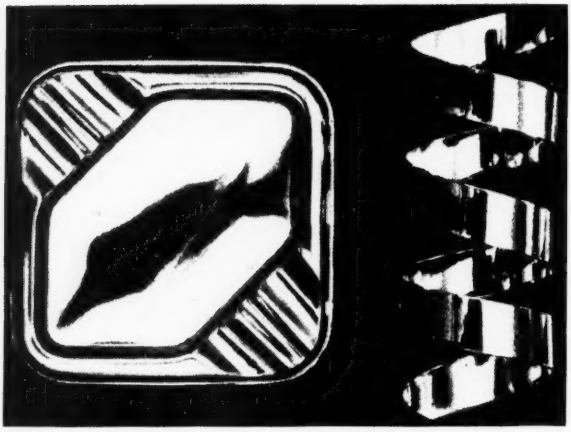
THE Perfect Circle Company, makers of Perfect Circle Piston Rings, decided that their method of cleaning rings was too slow and too costly. The rings were being washed by hand in mineral spirits, hung on bars and pushed through a drying oven.

You should see how they do it now! The only manual labor involved is loading and unloading the conveyor... otherwise it's automatic and three men clean an entire day's production on one shift. Yes, and tote pans are cleaned, too, alongside, in a separate washing machine so that clean ones are always available.

LET RANSOHOFF FIELD ENGINEERS *show you how to do better cleaning, usually for less money.*

THE SAVING IS A GOOD 66%.

N. Ransohoff, Inc.



Examples of irregularly shaped workpieces that are readily provided with a bright finish using the electropolishing process

found to be cellulose acetate-butyrate containing approximately 13 per cent acetyl and 37 per cent butyryl. This ester is available commercially as such or in a plastic molding compound under the trade name "Tenite II." A hydrocarbon, usually a commercial grade of toluene or xylene or a mixture of these two, and an alcohol, usually anhydrous isopropanol, are mixed to produce a suitable solvent.

The process consists of dissolving the ester or molding compound in a carefully balanced solvent combination at a temperature of 140 to 150 deg. F. When solution is complete, the temperature is dropped to approximately 120 deg. F. and bubbles allowed to escape, with the lacquer then ready for use. Articles are coated by a simple dipping operation, being withdrawn slowly, inverted, and set to dry. The smooth, heavy coating thereby deposited sets almost immediately to a firm, non-flowing gel on being exposed to room temperature, preserving the original contour of the applied coating. This setting to a tack-free, non-flowable coat occurs in a minute or so and at the end of 15 to 20 minutes the film is sufficiently hard to withstand normal handling.

Possible uses of this process in the finishing room are numerous. In general, it can be used on suitably shaped articles wherever a premium finish offering excellent appearance, good protection, and permanence are desired. Any use where the strength of metal plus the appearance and feel of a plastic are desired is a natural application. In addition, it can be used to give a decorative finish to articles molded from cheap scrap plastic or to low pressure laminates. It is the opinion of many finishing engineers that this phenomena of temperature gelation of a lacquer made from a high viscosity film former opens up many new and interesting fields in protective and decorative coatings.

* * *

Electropolishing—Its Commercial Aspect Today

THE most outstanding advantage of electropolishing is that it allows for the production of brilliant color having exceptionally attractive tone on many metals in simple and in complicated shapes. This was the general concept given at the 33rd annual convention of the American Electroplaters' Society by Dr. Charles L. Faust of Battelle Memorial Institute, a pioneer experimenter in the development of such processes. The method involves the dissolution of metal from the surface of the work that is made anodic in acid (and occasionally alka-

A research man at Wyandotte Chemicals Corporation uses the Comparoscope to evaluate and compare the finishes on metal surfaces. By means of this carefully designed optical instrument, Wyandotte was able to make the burnishing-compound improvements that resulted in Wyandotte Burnishing Compound 315.

AN *IMPROVED* BURNISHING COMPOUND

This new development in burnishing compounds is free of annoying and hazardous cyanide. Yet it surpasses the old-fashioned cyanide treatment in removing tarnish from copper base alloys, brass, bronze and copper. It gives the finest and brightest of finishes.

Wyandotte Burnishing Compound 315 rinses freely from the work and burnishing balls. It leaves no objectionable soap films to dull the work — no hard-water scum to call for frequent cleaning.

Your Wyandotte Representative will be glad to show you what lustrous surfaces you get by using Wyandotte Burnishing Compound 315. Why not give him a call today?

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line) solutions. Metal is removed under highly polarized and pseudo-passive conditions. Recessed surface areas are polished, as well as relief areas. This effect and the exceptional color tone that results provide the outstanding advantages.

However, it was pointed out by Dr. Faust that the same effect may react against the process in certain possible applications. Being electrolytic, it is dependent on the surface smoothness and on the physical and mechanical nature, and the "inherent cleanliness" of metal which has been processed through any particular method of fabrication. Seams, dirt, slag, and non-metallic inclusions, deep rolling or drawing lines, and certain insoluble phases in alloys are uncovered and may or may not be removed.

At the present time, evaluation of practical applications of electropolishing generally originates from a desire to replace hand polishing and buffing. This attempt frequently fails because proper considerations have not gone into the thinking. One must recognize and immediately accept the fact that there is no "electrolytic wheel finish." Electropolishing methods do not provide the same action as wheels and tumbling barrels, so it can never produce an identical finish. In view of this, it is obvious that there are applications where mechanical polishing cannot be replaced by electropolishing. Suitability can be determined only on the basis of whether the results are acceptable in their own right. Electropolishing should never be judged on the basis of whether it duplicates a wheel finish

According to Dr. Faust, many automatic and hand-operated machines now in use for different kind of metal surfacing operations can be replaced or complemented by electropolishing. Among these are: machining to exact size; removing of burrs from stamped, ground, punched, drilled edges, and so on; surface preparation by polishing and buffing before final finishing by electroplating, painting, lacquering, japanning, enameling, and so on. It might well be called electromachining, electrobuffing, electrodeburring, and so on; new avenues in design are opened up and many processing operations can be simplified. Over 100 companies, both large and small, are engaged either in pilot plant or production electropolishing or both in the U. S. A. Most of the installations are for decorative finishing, but some are solely for machining benefits realized from uniform metal removal without cold working effects.

Dr. Faust emphasized the fact that the acceptance of defects in the base metal which retard applications of electropolishing will not always be necessary. It is well known that defects in the base metal and rough handling in the stamping, drawing or casting departments are paid for by extra

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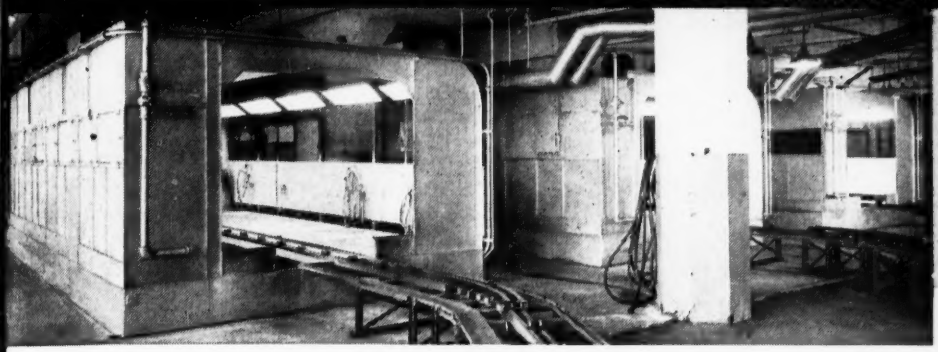

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AHON

costs in the polishing department—one of the most expensive departments to operate in any plant. The cost saving that is possible by electropolishing permits fabrication with premium metals and under conditions of better die maintenance and forming practice. The production man should remember that for best results by electropolishing, stampings must be made from good quality clean metal in cold rolled sheet or strip from clean rolls providing essentially complete reduction of pickle pits and imprints from previous hot rolling stages.

* * *

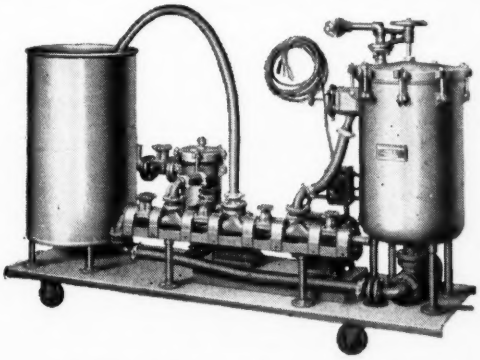
Reprocessing Porcelain Enameled Parts

IN spite of the most careful control of materials and operations, production men realize that there are a certain number of porcelain enameled parts which must be reprocessed in order to meet the high inspection standards established by manufacturers of quality ware. The small defects that necessitate reprocessing of the part on which they occur are most times of such a nature that their complete elimination is almost an impossibility. For the sake of classification these small defects may be grouped under three general headings: **Type 1,** those indigenous to the cover coat layer; **Type 2,** those affecting both the ground and cover coat layers, but not extending to the base metal; and **Type 3,** those originating in the base metal and affecting the overlying enamel

Enamel plant operators have devised a number of different means for handling such difficulties but for the main they all follow a similar procedure. Fundamentally, this involves the elimination of the affected spot by some abrasive, subsequent filling of the ensuing depression, followed by a

You can keep your plating plant operating at top efficiency only if you have adequate filtration. Industrial filter systems are designed and built to provide continuous high speed filtration and circulation.

Industrial Filters equipped with the AIRWASH cleaning feature have been in continuous use for months without opening the filters or removing the plates. Air agitation quickly dislodges the accumulated sludge and leaves the filter clean and ready for a new filter cycle. Many hours of production time are saved thus lowering your operating costs.

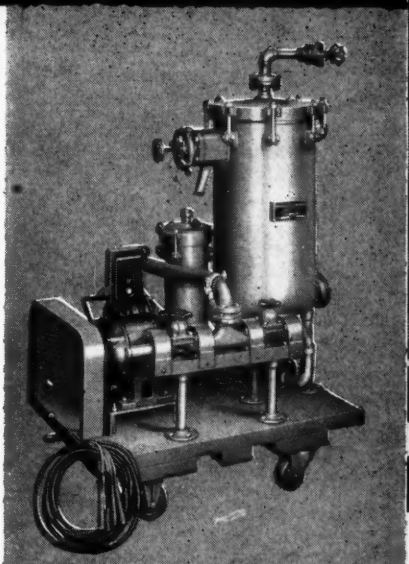


No. 1—Filter shown is equipped with slurry tank with double suction and discharge control providing an ideal continuous filtration system.

Other Products

Salt Fog Corrosion Test Equipment

Centrifugal Pumps of Duriron, Worthite Stainless Steel, Hard Lead, Bronze and Iron.



No. 2—A typical portable filter as constructed for bright nickel, acid copper and other acid type baths. Ideal for either intermittent or continuous filtration.

In Stock

Filterbestos

Activated Clay

Activated Carbon

Filter Powder in all grades

Prompt shipment

recoating of the entire part. In Types 1 and 2 the recoating is usually accomplished in a one-fire operation, whereas repairing of the Type 3 defect involves two fires and sometimes more. In those plants where quality is considered as important as economical operation, greater care is given ware that must be reprocessed than regular production parts, since it is a recognized fact that the possibility of these parts being accepted on the second inspection is considerably less than on the first.

One of the most serious objections to this method of repairing small defects lies in the fact that the entire enamel surface is given an additional coating, resulting in increased thickness of enamel with its attendant lowered resistance to damage. To overcome this objection, the obvious solution would be to recoat only in the affected areas where the number of imperfections on the part is not too great. Since this would mean that the unrepaired areas would be subjected to an additional firing, it is imperative that the enamel have the ability to withstand refiring without harmful effects. It has been well demonstrated that certain present-day enamels do have this desirable property, and thus afford this means of repairing without the necessity of recoating the entire part.

The following properties essential for a patching enamel have been prescribed by E. E. Howe, Assistant Director of Research, Chicago Vitreous Enamel Product Company (see also "Better Enameling," May 1946): (1) It must have the ability to dissolve iron oxide; (2) It must be capable of adhering to the base metal; (3) The enamel should be white and sufficiently opaque to blend with the surrounding cover coat, but should not possess too high a reflectivity; (4) The ability to flow out well in a relatively short time is a requisite; (5) It should have a low drying and firing shrinkage.

Since neither the commercial blue coats nor the zircon type cover coats meet all the above conditions, it has been necessary to develop special enamels for this particular application. When these special enamels are used in shop tests, they are mixed with clay opacifier, and water. The material is used at high specific gravities and the parts to which it is applied are processed in two ways.

In the first method, the affected part is filled with patching enamel after removal of the defect by grinding. When the enamel has partially dried, the area is given a light spray with regular finish enamel and the part is then fired at the normal time and temperature used for the cover coat. The other method of utilizing these special enamels involves the application to the affected spot of more material than is required to

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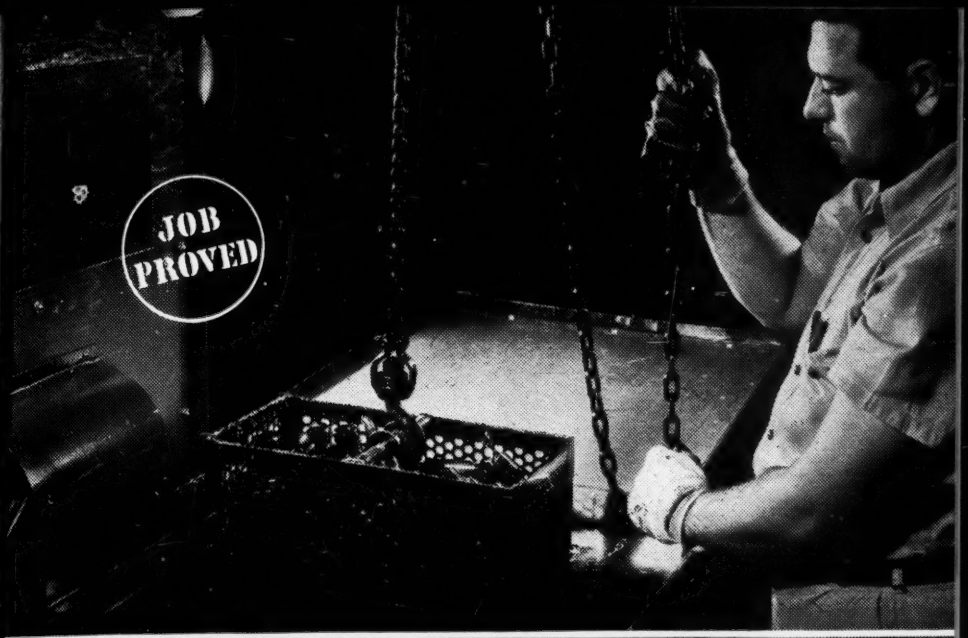

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Cleans Parts Without Excessive Evaporation, Cooling and Rusting

Cleaning machine parts before assembling them was a double headache for a New Hampshire manufacturer. First, he was using an expensive, unstable material for cleaning. Secondly, rapid evaporation caused chilling, followed by sweat and rust.

Sun Spirits, "Job-Proved" on metal cleaning work in hundreds of plants, was adopted. This solved the problem, and made possible savings estimated at $1,000 a year.

Parts are now cleaned quickly, simply and inexpensively. They pass inspection with no rusting.

This concrete example is typical of the way in which Sun Spirits has proved its value *on the job.* To get rid of dangerous cleaning materials or unnecessary expensive equipment that requires highly trained operators, let a Sun Engineer tell you how "Job-Proved" Sun Spirits can cut the cost of most cleaning operations.

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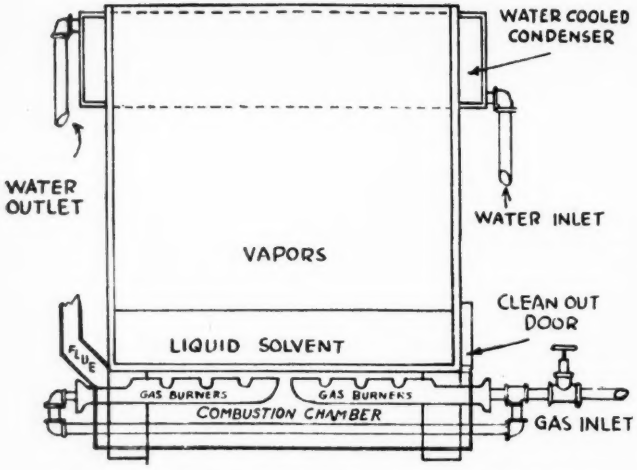


Position of combustion chamber and gas burners in relation to solvent tank in a gas-heated degreaser

bring it to the same plane as the top surface of the surrounding enamel. After firing, the resulting lump is ground flush and the entire part is enameled with a light coat of respray enamel.

The practicability of utilizing a special enamel for repairing a particular class of porcelain enameled items that do not meet inspection standards can be readily visualized. Its use can be abused, however, if enamel workers are made to feel that careless workmanship in initial processing can be rectified without difficulty. The efficient production man should realize that it is only where extreme precautions have been taken to obtain good ware and defects result that patching enamel should be used.

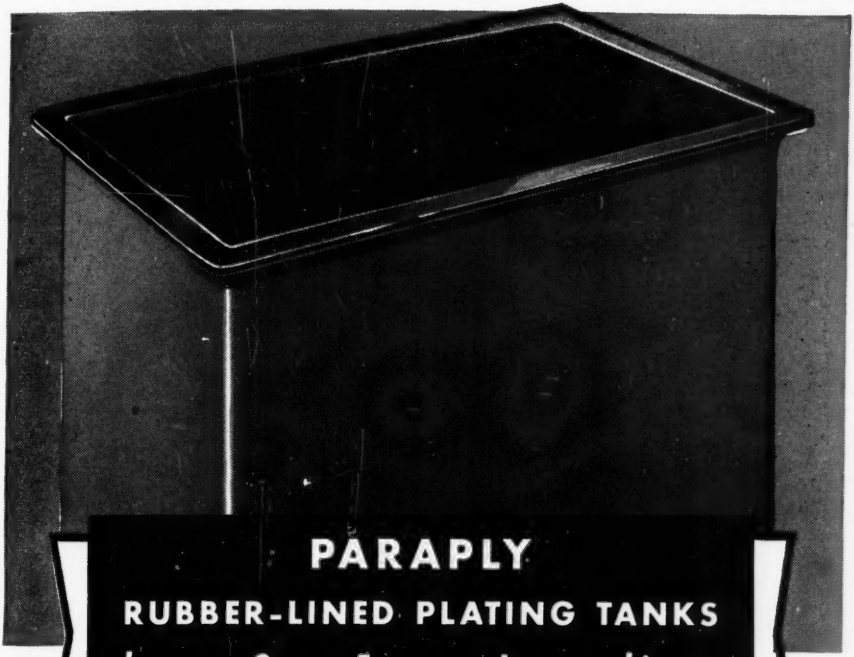
* * *

Blackening Process for Stainless Steels

A NEW process for blackening stainless steels has recently been reported by metallurgists at the Rustless Iron and Steel Research Laboratories. The new black coating is formed in a non-aqueous bath at moderately high temperature, preferably a bath of molten sodium dichromate. The unusual endurance of the coating when exposed to heat and atmospheric changes is attributed to the fact that it is an oxide of the metal and not a hydroxide. Not only does the blackening show no tendency to turn gray in service over a period of time but Rustless' engineers also report that no alteration of color was visible under the microscope after over a year of exposure to all the fumes and gases of a research laboratory.

Very little equipment is needed to carry out the blackening process. All the finishing engineer needs is a steel tank of suitable size, an adequate method of heating and some holders or baskets in which the parts are placed during immersion. Good practice calls for a cover and stirrer to assist in keeping the coating uniform.

All scale, grease, oil or other foreign substances should be removed from the parts by usual cleaning methods preceding the blackening operation. The molten sodium dichromate in the blackening bath should be maintained at a temperature between 730 and 750 deg. F. The treatment time will vary depending on the number and size of the parts and the grade of stainless from which they are made, however, stabilization of coating for



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all types usually occurs after 20 to 30 minutes' treatment time. Parts are then removed from the hot bath, allowed to cool to room temperature, and rinsed in hot water, in which the readily soluble salts are easily removed. The use of oils and waxes to improve the luster of the black finish has been found successful.

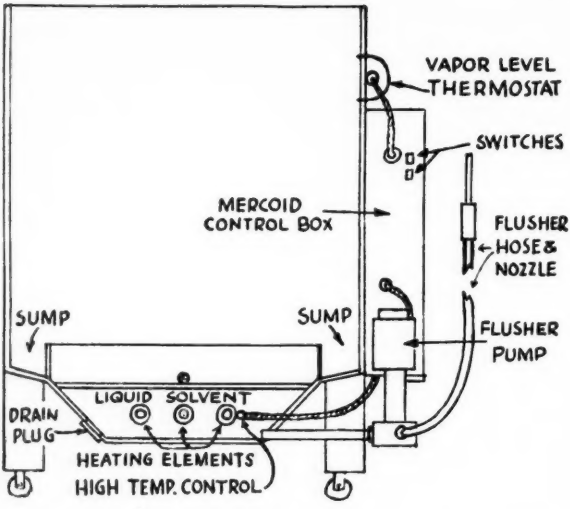
Now that a durable black-finished stainless is available many designers and finishing engineers will want to investigate the process not alone for the color value but also to demonstrate the added merit of greater endurance of the corrosion resistant base.

* * *

Vapor Degreasing Offers Efficiency and Economy in Finishing Operations

THE production man should realize that modern vapor degreasing methods have many advantages when used in present-day finishing operations. The floor space required for degreasing operations is minimized by compact equipment; in general, equipment and methods have kept pace with improvement in solvents. The efficiency of modern electric and gas heated degreasers gives maximum production in minimum space and complete penetration of close-fitting parts without disassembly, thus resulting in reduced handling. Vapor degreasing of parts prior to the removal of scale or oxide may in some cases effect a substantial reduction in the quantity of chemicals required for subsequent processes such as pickling.

Any vapor degreasing machine is primarily a chamber in which the solvents are boiled until a heavy vapor is formed inside the chamber. The machine must control vapor temperature and level for efficient, economical and safe operation. When oily or greasy metal is introduced into the hot, solvent vapors, surfaces of the metal heat rapidly to the temperature at which greases become fluid. Vapors condensing on the cooler surfaces of the metals are highly miscible and have a flushing effect which completely removes all traces of the grease. When the metal surfaces have attained the same temperature as the vapors, condensation ceases and the degreasing operation is completed.



Arrangement of heating elements, controls, and fluid system for an electrically-heated degreaser

The degreasing machine should be designed so that positive controls regulate the temperature and level of the vapor. Regulation of the temperature at a given point will control the normal vapor level; that is, the top level to which the vapor rises in

From flat strip steel to final form in five draws. That was the production plan for these booster case cups above. But production speed was impossible because of short tool life, breaking and scoring of punches and dies, tearing and scratching of work. Then the work was Bonderized after the first draw, and these troubles were minimized.

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the machine when operating at maximum heat input, with clean solvent and with no work in the machine. The machine should have adequate heating capacity to quickly restore the vapor level after work is inserted in the machine. By maintaining the normal vapor level, whether work is in the machine or not, the efficiency and economy of the machine is at a maximum. Present-day degreasing machines are of the electrical, gas or steam heated type; the newest type of vapor degreasing machine is that which is completely heated and operated by electricity. Proper consideration given to the location and installation of degreasing machines will assure maximum efficiency and economy and a minimum health hazard.

Assuming standard solvents and commercial degreasers are used, the success of vapor degreasing may oftentimes lie with the operating technique. Thus, the production man using vapor degreasing in the finishing line should emphasize certain rules to the operators: (1) Vapors should reach normal vapor level before any work is inserted into the degreaser, and work should always be inserted slowly into the vapors to avoid agitation. Displacement by work causes an overflow of vapors. A good rule to follow is to insert work at the rate of about 12 feet per minute for greatest speed in the degreasing cycle. (2) Remove work from the degreasing machine slowly and at the same rate of speed as used in inserting. When work has been drawn out past the normal vapor level, suspend it momentarily to permit final drainage of the condensed vapors. If there are crevices, turn the work at angles which will permit complete drainage from crevices. If the work has been completely degreased, it will come out perfectly dry. (3) As work must be heated to a high temperature, long hooks, or trays with long handles, should be used in handling. Small parts should be placed in a basket for degreasing, and cupped parts should be arranged to avoid trapping solvent. If possible, they should be tumbled. Where tumbling of machined parts is necessary, cork balls mixed with the parts in the tumbler will protect the milled edges.

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* * *

A Bronze Plating Bath

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Installation of FTR 4222-AS Rectifier Equipment, delivering 1000 amperes 6 volt per unit to an automatic electroplating unit.

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ably depend somewhat on corrosion resistance, and since bronze is usually cathodic to steel the coating must be continuous and pore-free. Alloy deposits are usually fine grained and bronze is no exception; deposits 0.0003 to 0.0005 inch thick have been reported to be pore-free.

A successful bronze plating bath having the following composition has recently been described ("The Monthly Review," April 1946):

Constituent	Concentration
Sodium Stannate	5.0 oz./gal.
Copper Cyanide	4.75 oz./gal.
Sodium Cyanide	7.25 oz./gal.
Sodium Hydroxide	1.50 oz./gal.
Temperature	145-155 deg. F.
Cathode Current Density	15-25 amp./sq. ft. (average)

An important factor in the success of the bronze plating process is the control of anode corrosion. Dual anode circuits are used, with a tank voltage in the copper circuit between 3 and 3.5 volts and a voltage in the tin circut of 4.5 to 5 volts. One of the critical factors in the operation of the bronze plating solution is the maintenance of the pH above a value of 13, as determined with a colorimetric comparator. Aside from pH measurements standard methods of analysis should be used for tin, free sodium cyanide, copper, and caustic soda to maintain the concentrations within reasonable limits of the ranges shown above. Finishing engineers looking for a new plated finish may find it profitable to investigate this bronze plating procedure.

"Production Talks Backstands," a 12-page booklet prepared by the Behr-Manning Corp., Troy, N. Y., is designed to provide production men with answers to

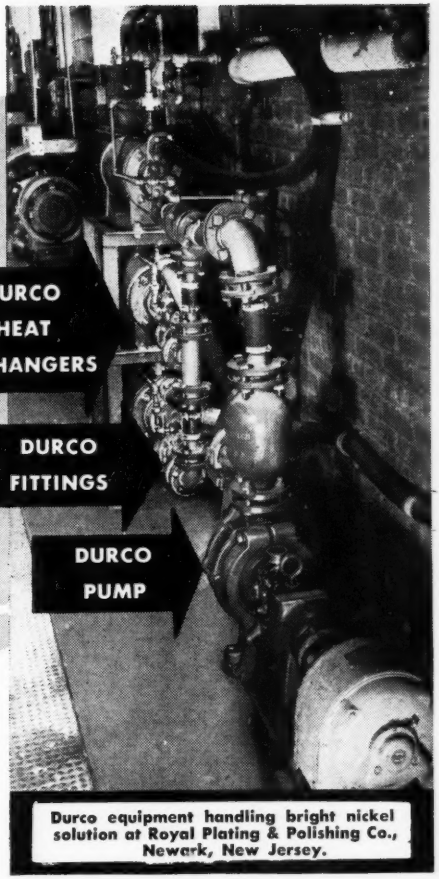
the question "Can backstands boost our grinding and finishing production too?" Factually written from field engineers' case reports on backstand installation in seven diversified industries, the booklet is said to permit accurate appraisal of backstand adaptability by direct comparison. Copy free upon request.

Richardson-Allen Rectifier Equipment. The Rectifier Engineering Division of Richardson-Allen Corp., 15 W. 20th St., New York 11, N. Y., now has available for the electroplating industry a series of three leaflets covering various types of selenium rectifiers. Copies free upon request.

Ferro Quarterly Price List. The Ferro Enamel Corp., 5150 E. 56th St., Cleveland 5, Ohio, announces the inauguration of a quarterly price list giving prices on supplies for porcelain enameling. The equipment and materials listed include frit, furnaces, mill additions, and so on. Copies will be mailed regularly without charge to those interested.

Nukem All-Purpose Resinous Cement. The Nukem Products Corp., Buffalo 20, N. Y., now has available a six-page illustrated folder covering the properties, uses, and application of its all-purpose resinous cement which is especially designed to cope with the chemical conditions encountered in chemical plants, oil refineries, pickling houses, steel processing mills, and numerous other plants. An outstanding feature of the folder is a complete resistivity chart for the cement. Copy of folder free upon request.

WHERE CORROSIVE PLATING SOLUTIONS GET NOTHING TO EAT



Durco equipment handling bright nickel solution at Royal Plating & Polishing Co., Newark, New Jersey.

Here's Durco equipment made of Duriron—safe for a *long life*—pumping, piping and heating a hot bright nickel plating solution. Duriron has been used successfully for bright nickel plating solutions as long as they have been commercially available. *New* installations like the one above, go in alongside the very first made—the oldest installations in excellent condition and comparing favorably with the newest. Except for the fluorborates (for which Durimet is used), Duriron is practically unaffected by nickel, chromium and copper plating solutions. Duriron will not "poison" these solutions.

For further information: Durcopumps – Bulletin 810; Heat Exchangers – Bulletin 1602; Flanged pipe and fittings – Bulletin 704; Valves – Bulletin 605-2. For complete heating or cooling and pumping equipment – State tank capacity, operating temperature, available steam pressure, and run of work.

14-GM

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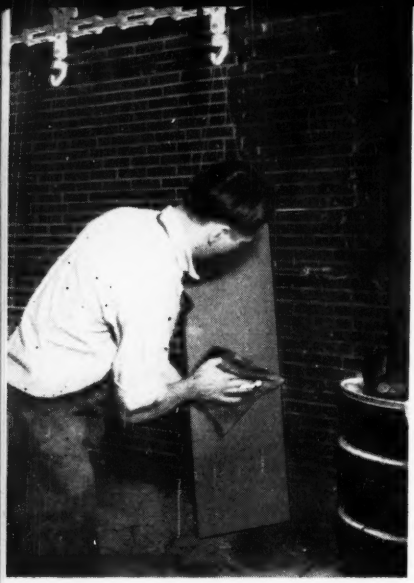
CORROSION RESISTING ALLOYS & EQUIPMENT

THE DURIRON COMPANY, INC.

DAYTON 1, OHIO



Tack Rags Assure Flaw-Free Finished Surfaces

By PHIL COHEN
President, Detro Sales Company
Los Angeles, California

The author discusses the evolution of the tack rag and its present-day manufacture and application.

ALTHOUGH the name "tack rag" may sound new to some finishing department executives, actually, the term is as old as many finishing materials. In bygone days when varnishes were applied to wagons, tack rags were "home made." Usually, the worker merely dipped a piece of cloth into the varnish and then shook the cloth briskly until the absorbed varnish had dried and the cloth was sticky or tacky. After the work to be finished was thoroughly sanded, the worker wiped or "tacked off" the surface with the home-made tack rag to make certain that all fine sanding particles had been removed. The home-made tack rag had to be used immediately upon reaching a proper stickiness or tack since continued drying would result in a hard or stiff piece of cloth in a very short time, and therefore useless as a tack rag. Many home-made tack rags were highly combustible, thus constituting an ever-present fire hazard, and therefore these rags were required to be placed in metal containers.

Today, finishing materials are still being applied to surfaces but we have substituted the automobile and the airplane for the wagon, and added a wide variety of other products such as refrigerators, heating appliances, and so on. Improvements in the surface finishes on these products is reflected in the improvements of tack rags. No longer is it necessary for the worker to resort to the varnish cloth of years ago for today a first quality tack rag is a manufactured product. The tack rag is made of chemically treated cheese cloth which is permanently soft and tacky and never dries out and what is most important, the treated cloth is spontaneous combustionproof.

Tack rags play a very important part in a highly competitive merchandising market. A purchaser is attracted to a product by the eye appeal which the product stimulates; namely, the color and highly polished

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Typical Example
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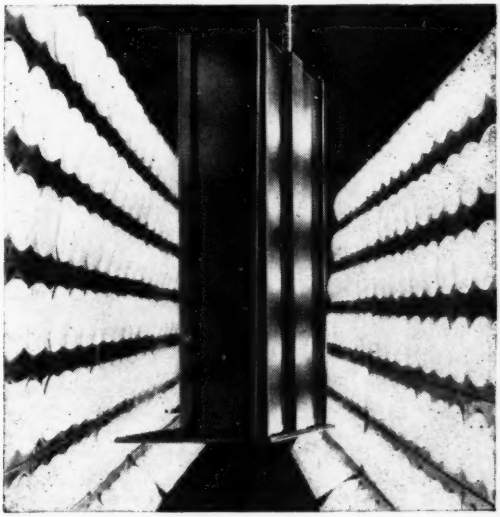

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Because-

1. Evenray models utilized GOLD on all oven interiors for maximum efficiency. Gold is the best reflector of infrared rays—98% efficient.
2. Evenray's 2-wall construction, in conjunction with GOLD interiors provides double insulation against heat losses.
3. Evenray's FIRST COST is economical because component parts of each customer made system are manufactured on mass-production basis.
4. Evenray Systems are designed to accommodate all clear and reflector type infrared lamps available today—up to and including 1000 watts.
5. Evenray Systems are flexible—can be added to or altered quickly and easily. They can be suspended from ceiling, and made to fit current production lines.
6. Evenray Systems are listed under Re-examination Service of Underwriters' Laboratories.

Write For Literature

A brochure EV-1245 describes EVENRAY SYSTEMS and shows typical installation photos. Portable equipment catalogs also available.

THE FOSTORIA PRESSED STEEL CORP.
FOSTORIA, OHIO
Export Sales Department, 401 Broadway, New York City, U. S. A.

attractive finish. It is impossible to obtain a perfect finish if the preparation of the surface before applying the surface finishing material is not complete. Tack rags are the finishers insurance policy that the surface will be free from all dust, lint, and fine sanding particles.

When air guns are used to blow off fine sanding particles and dust from the workpieces, the dust remains in the air surrounding the workpieces and settles back down on the work during the application of a finshing material. Some of the particles which settle on the work during the finishing operation have a tendency to move up to the surface of the finishing material during the drying operation. Attempts to remove these particles by polishing them out are of no avail after the finish has set since they are firmly embedded in the finish. The dust, lint, and sanding particles which do not raise through the finishing material during the drying process remain on the surface and do not permit a proper bond of the surface and the finish. This condition may have a tendency to cause the finish to check, orange peel, and crawl.

Finishing material manufacturers, realizing the importance of tack rags, constantly recommend their use. In many cases, they distribute tack rags through their jobbers and their service engineers. These men realize the seriousness of being blamed for marketing unsatisfactory finishing materials when in reality the surface was not tacked off before the finishing material was applied. The dirt that appears to be in the finishing material is merely dust, lint, and sanding particles which were not removed from the surface.

High grade finishers cannot afford to gamble with the results of their labor. By using properly prepared tack rags, a finisher can be assured of a flaw-free finished surface.

Permutit Water Softeners. Basic types of ion-exchanging water softeners for industrial, institutional, and municipal use are explained in a booklet issued by The Permutit Co., 330 W. 42nd St., New York 18, N .Y. Covered are water softeners of both pressure and gravity types which feature automatic equipment for controlling backwashing, brining, and rinsing processes. Copy free upon request.

Refresher Booklet on Organic Coating. The Liquid Plastics Division, Ferro Enamel Corp., 4150 E. 5th St., Cleveland 5, Ohio, announces the publication of a booklet entitled "Review of Product Finishing with Organic Coatings." The booklet, educational in nature, includes the following chapter headings: "Metal Preparation for Organic Finishing;" "The Importance of Metal Preparation;" "Control of Organic Finishing Materials and Application;" "Accelerated Testing of Organic Coatings;" and "Selection of Organic Coatings for Product Finishes." Copy free upon request.

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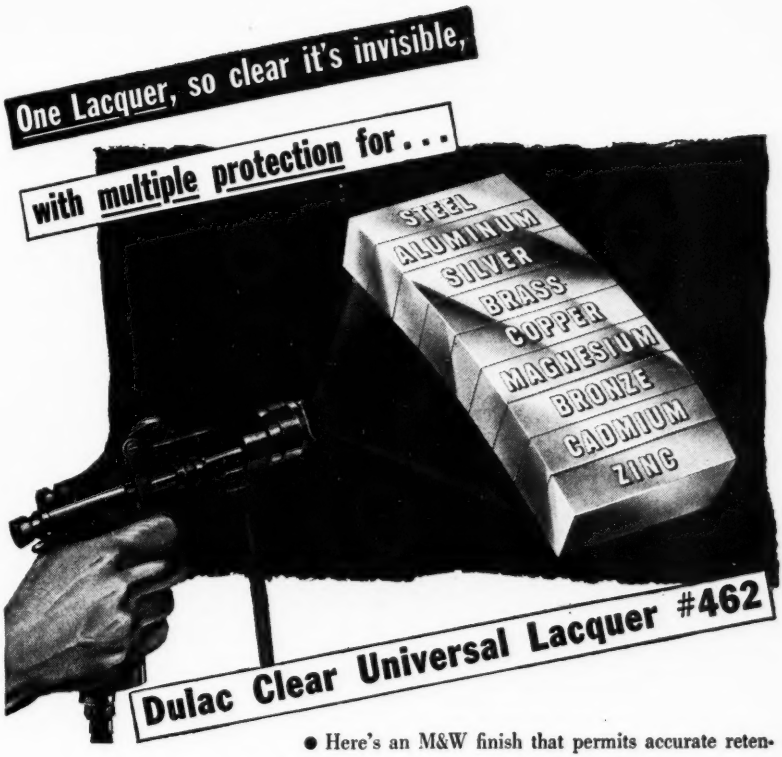

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PRODUCERS OF LACQUERS, ENAMELS, SYNTHETICS AND SPECIALIZED PRODUCTION FINISHES

Barrel Finishing of Metal Products

By H. LEROY BEAVER

Barrel Finishing Consultant
Lansdale, Pennsylvania

WITH the exception of one interim paper on the subject of "burring" published in September, 1943, it is now exactly four years and eight months since the somewhat hurriedly written valedictory abruptly terminated the series of discussion on barrels, barrel finishing materials and processes that was published in the January 1942 issue. The reason for this termination was not because the subject had in any sense been exhausted, but solely because those in authority felt that to disclose this information might give aid and comfort to our then enemies.

This article is a foreword to a new series of articles on Barrel Finishing Procedure prepared by H. Leroy Beaver, Barrel Finishing Consulting Editor, PRODUCTS FINISHING.

Activity in research continued all through the war production years, and since the end of hostilities there has been a flood of requests for further information respecting barrel finishing, and especially from those now reconverting or in contemplation of reconversion to peacetime products. The question "Did the previous series exhaust discussion of the subject of barrel finishing, or is there more to come?" Answering this oft recurring question, it may be said that if the preceding sixty-one papers already published were to be considered as only a rather comprehensive introduction to the subject, that would about express the situation, for if research activity were to be discontinued completely as of this day, there is still sufficient material on hand to provide for the preparation of at least one hundred more separate discussions, and if these were so prepared and published monthly, it would require eight and a quarter years to cover the matters already investigated.

The use of the editorial "we" in all of these discussions seems to have provoked many readers to ask the question whether the "we" indicated that a large research staff collaborated in the preparation of the maetrial as well as in the actual conduct of the experimental work itself. The answer to this double barreled question is of course "no." This whole story and the entire series of experiments now entering its thirty-seventh year has been an individual effort, and right now this same thirty-

seven years seems a long time to devote to one single phase of the surface treatment of metals. The sole reason for the use of this editorial "we" is due to a decided aversion on the part of the author to the overuse of the perpendicular personal pronoun. All of the information previously published as well as the various phases still to be discussed could never have been developed as the brain child of a single individual and they are really in a sense what might be termed a broad collaboration not only with workers in metals in the United States but in almost every country in the world where PRODUCTS FINISHING circulates.

A question here and a suggestion there have developed the causes for examination and experimentation not only in barrels themselves, but in products to be used in the finishing process. Over this long period of years these discussions must have been shared by several thousands of men whose main interest was metal finishing and so in a very large sense your author feels that he must regard a large part of this work of extending the information in the light of a stewardship. The whole enterprise is simply termed "Beaver Barrel Finishing Research." It is not now, nor has it ever been nor will it ever be sponsored by any manufacturer of either barrels or materials; it is not an employee of or a stockholder in or financially interested in any organization manufacturing commercial barrel finishing equipment, and no such manufacturer has ever made any contribution to the expenses of the long extended experimental periods, all of such expense having been borne from the author's own personal funds. The entire research might be best described as "free lance" enterprise. What we have tried to do in the preceding discussions and what we shall con-

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Division of Hobart Brothers Company
"One of the World's Largest Builders of Electric Generators"

tinue to try to do is to give you the best impartial job of factual reporting of which we are capable. In these discussions it is quite possible that some recommendations will not meet with the approval of every reader, but we feel that the crystal truth has many facets and that the desire for exact and accurate information from all those interestedly concerned in the mass production of metal parts will be great enough to enable them to feel that we all seek only the truth and that no offense is ever intended.

Then, too, we have received many letters wherein some expression we have used or part of a description of a process or material has been questioned as being obscure. This, of course, is clearly realized but when one has as limited a vocabulary as your author, it is not always easy to paint a word picture of a process or material so that you, the reader, may picture it in your mind's eye in the same sense as we see it with the material or process directly before us. One group of five words, namely, "centrally suspended in the mass," has perhaps provoked the greatest amount of questioning. That brief phrase is most important, and an entire paper will shortly be devoted to a discussion of just that phase of barrel finishing procedure. All that we can say in this regard is that, if there is anything about any of these discussions that you recall or that you have on file that is not entirely clear to you, please don't hesitate to ask for clarification. If we take a given experiment, there is never sufficient space allotted to enable us to describe in most minute detail every step in the complete operation. At best, we can give you what we might term a groundwork outline from which we feel you can develop its application to your own special problem or work, or perhaps expressed a little differently we are trying to help you to help yourself.

Then there has been a long line of questions that all lead to the same end—"how fast or at what r.p.m. shall we operate our barrels," and you would be surprised to know in how very few cases the size or style of the barrels are even mentioned. Surely every reader of this publication must at some time or another have either read or heard of the fable of "The Hare and the Tortoise." The moral of the fable was that, "The race was not always won by the swift," and while there will be further discussion of the matter of barrel speeds we want, for the moment, to remind you that the best results in barrel finishing procedure are not obtained by a violent threshing about of parts and materials composing the burnishing mass in the barrel, irrespective of its type or size, but that the most satisfying finishes are always obtained by continuously sustained pressure on

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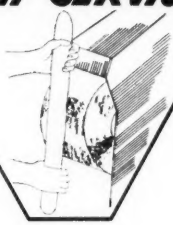

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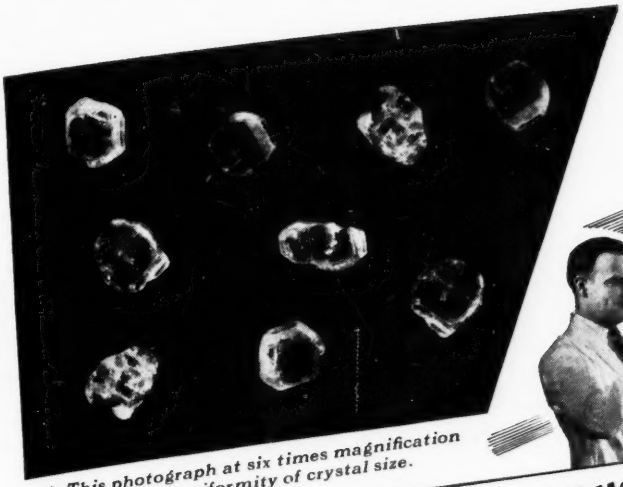

★ *This photograph at six times magnification shows uniformity of crystal size.*

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You can easily observe the rapid solubility and freedom from foreign matter in Harshaw's New Single Nickel Salts. • Fill two beakers with distilled water. Pour a small amount of Harshaw's uniformly small free-flowing crystals into one beaker, and a like weight of the old type salts into the other. Hold both beakers up to the light. Watch how much faster Harshaw's New Single Nickel Salts dissolve, and also notice how much clearer the solution remains. • The extreme care used in our unique process for producing these uniformly small $NiSO_4 6H_2O$ crystals, easily explains their superiority over the old large type crystals. • If you are looking for improved single nickel salts—easily handled in convenient packages—order now from the Harshaw Branch nearest to you.

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the parts as they pass slowly through the mass. There is no point in rapidly turning out a barrel load of parts only to have one-third meet inspection as satisfactory, one-third be designated as "seconds" or "reworks" and the final third relegated to the scrap heap.

Then, too, if you might look over our editorial shoulder and read some of the letters that come to us you would be surprised at the many recurrent expressions of "I can't do this" or "We can't do that," or "I won't try this" or "We won't consider doing that." Please be sure that nothing is ever reported in any of these discussions unless either the process or material or both is entirely both mechanically possible as well as commercially practicable, and that the operations described have actually been performed with the materials described. We never have and never shall permit ourself to assume anything in our research work to be a fact unless we have first proven it so to be, and the operation must be first determined as entirely mechanically possible as well as commercially practicable before it is passed along to you.

But with all of this "can't" complex, we feel that perhaps we should tell you a simple little story. It is meant for both executives and operatives alike, because this "can't" complex has been exhibited by both. The story was first told to me just forty-six years ago by a kindly remembered grammar school principal, and here it is:

There were once three young boys whose names might well have been Thomas, Richard and Harry, but they were not, because the name of the first boy was "Can't," the name of the second boy was "Won't," but mark this carefully, the name of the third boy was "Try." Which of these three do you suppose completely achieved the goal in life he had set for himself?

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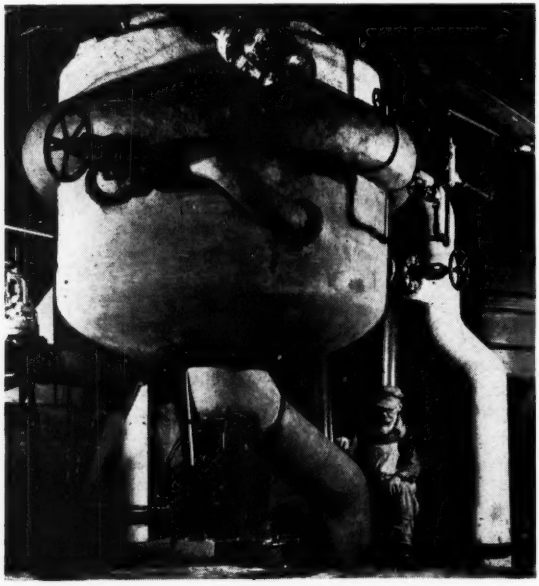
So, if you will approach these discussions which are written in a sincere effort and wish to be helpful in the spirit of "Try" rather than in the spirit of "Can't" or "Won't," then you should derive considerable benefit from them. If we had adopted the answer of "Can't" to all of the problems that have come to us you would not have read the previous sixty-one discussions, nor would you be reading this one, or the ones to follow. From time to time men will say to us "Well, you know all of the answers in barrel finishing." Frankly we know nothing of the sort for after all we are not that smart. We do not now nor have we ever entertained the conceit that we know even a small part of what are generally called answers. It's quite true, we suspect, that even if you turned a blind hog loose in an oak forest that he would manage to find a few acorns and it has been so with us as respects barrel finishing procedure. Down through the years we have learned much and have solved some of the problems that have beset barrel finishing from its very beginning, but the subject taken as a whole would be too much for one person to undertake and we suspect that after thirty-seven years of effort we should feel rather more apologetic at knowing so little about it, than conceited enough to feel that we knew all about it. In some cases we will, of course, know the answer, but in far more cases the chances are we won't know it, but we will try to find it for you.

Then we have another line of correspondence that needs some comment. Those of you who have followed these discussions on barrel finishing recall that we very often suggest that you submit your problems and that we will do our best to help you to a solution, but what these correspondents want to know is "Will there be a big fee charged for this help," or



THE accompanying illustration shows a 1,000-gallon resin kettle which has been placed in operation at the Arco Cleveland plant, supplier of synthetic enamels used by some of the country's largest manufacturers of appliances and steel kitchen cabinets. This is one of two units installed at the plant to increase the output of synthetic enamels to be used in providing postwar products with finishes that are designed to withstand all kinds of wear.

(Photo courtesy The Arco Company)

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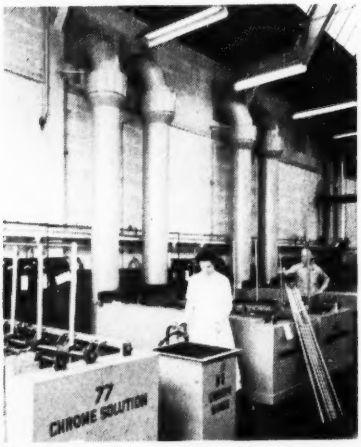
GENERAL ELECTRIC

"How much will it cost us for a research report with recommendations?" We will try to forestall more of these questions by telling you that for such help as we can provide there will be no fee charged and the cost to you will be only your time and patience in answering correspondence until we get your problem cleared up. After all, PRODUCTS FINISHING is your publication and it will be helpful to you just in proportion as it is able to help you to a solution of your problems, but it will be restricted in extending such help unless you make your problems and wants known. It is largely from presented problems that we can sense the matters that might prove of interest and help to the greatest number of readers interested in barrel finishing. Here then, you have before you the vista of a possible hundred discussions to come, not to mention the sixty-one that have gone before, so what phase or phases of barrel finishing would you appreciate the most and what would be most helpful to you? There is, of course, no need for any of you to express your appreciation to us personally for any help we might have been able to bring to you, and we feel that whatever appreciation you feel should be rather extended to the advertisers who after all make the publication possible. We personally know many of them as well as their field men and you will find that same feeling of a wish to cooperate with you in the solution of your problems as you will always find in the conduct of the editorial departments.

The approach to a barrel finishing problem as expressed by many of you in your letters might roughly be likened to a motorist trying to drive backward on the wrong side of the street, or in the case of those operators who insist that "The way I do it was good enough for my grand-

Looking for a Stopper to Corrosion Costs?



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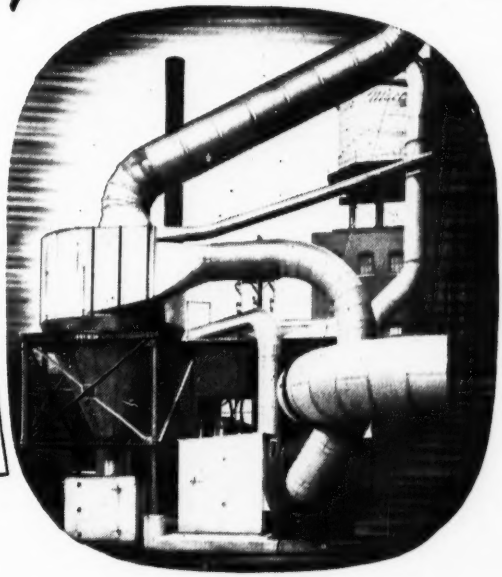

CRAIG WOOD, *widely known professional golfer watches a MacGregor precision grinding operation.*

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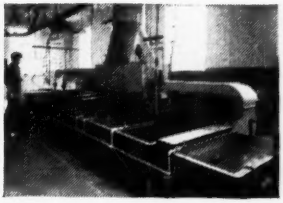
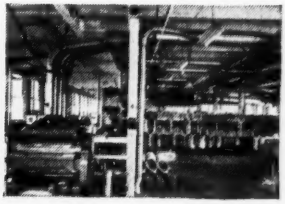




Kirk & Blum Dust and Fume Control in grinding, plating and woodworking departments of MacGregor Golf, Inc., Cincinnati, Ohio.

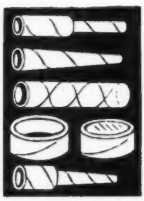
father and it's good enough for me," which might indicate that while they are on the right track in using barrel finishing at all, the fact is that they are sitting still and stand the very best chances of literally being run over by more progressive competitors who are always in search of the latest and best, both in methods and materials.

Periodically we are faced with that thing generally termed a "secret process." This seems to be something developed within an organization in their barrel finishing activities. We have met with many of these in personal visits to plants. In one case, the so-called process had been lifted in toto from a discussion in PRODUCTS FINISHING, which while it might have been a secret to that particular plant, just happened to be shared by between sixteen or seventeen thousand other readers, and without conceit we have never found a single one that could not stand revision to its betterment. The point we wish to make here is that, when you lock the door of any department of a plant, be definitely sure that you are not locking out more valuable information than you are locking in.

Then too we have been asked periodically about patents. We had not planned to discuss this phase but we would wish to say that on all of the original research both as to methods and materials it is fully meant and intended by the author and by the publishers, unless specifically otherwise noted, that they be fully meant and intended to be a dedication to public use, and that neither information as to material or processes are to be seized upon by anyone for inclusion either in whole or in part in any claim or claims in any application for Letters Patent, whereby their use might be restricted.

While we have a program of discussions outlined, it is, of course, subject to revision along the lines of the expressed wishes of the majority of the readers interested in barrel finishing, and it will be so revised as your letters will indicate.

Then there are others who have thought that because they were just a small organization that we might not feel their problems were of sufficient import to warrant much attention. Even though you may be the operator of a one-man shop down some side street, your problems are as real to you as are those of the largest corporations and perhaps more so for most of the larger organizations maintain their own research staffs to make their own determinations which, of course, you cannot do, and it is especially in just such cases that the research service of PRODUCTS FINISHING has been able to be of the greatest help. You need not have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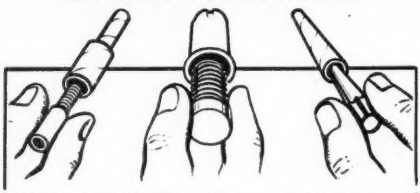
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stenographic service and if you wish you may write on both sides of the paper and with pencil, feeling sure that your problem will merit exactly the same attention as that of any other presented to this division of the Editorial Department.

In order that your requests for information may be a matter of record in the publication office, it will be appreciated if you send your requests for information direct to the publication office and they will be forwarded to us direct to where we may be at the time, and if it chances we are in your immediate neighborhood, we will be happy to give the matter personal attention.

Eclipse Spray Equipment. The Eclipse Air Brush Co., 424 Park Ave., Newark 7, N. J., announces a 44-page catalog in three colors describing the complete line of Eclipse low pressure spray equipment. A primary feature is the series of sample tests by which spray equipment users can easily judge for themselves the value of low pressure spray equipment. This is followed by information on all Eclipse equipment now available, including manual and automatic spray guns, nozzles and tips for all materials, extension nozzles and extension guns, accessories, pressure tanks and control heads, portable painting units (both gasoline and electrically powered) stationary compressors, and Pneumix air-motored agitators. Throughout the catalog, application photographs supplement the product detail and indicate the wide range of uses for Eclipse equipment. Copy of Catalog 86 free upon request.

Jensen Conveyors. An eight-page catalog now being issued by Jensen Specialties, Inc., 9331 Freeland Ave., Detroit 27, Mich., illustrates and describes Jensen Straight-Line, Loop-Around, Dual-Strand, Belt, and Special Conveyors and their use in license plate finishing, baking and drying of paint on small parts, and various other operations and installations. Copy free upon request.

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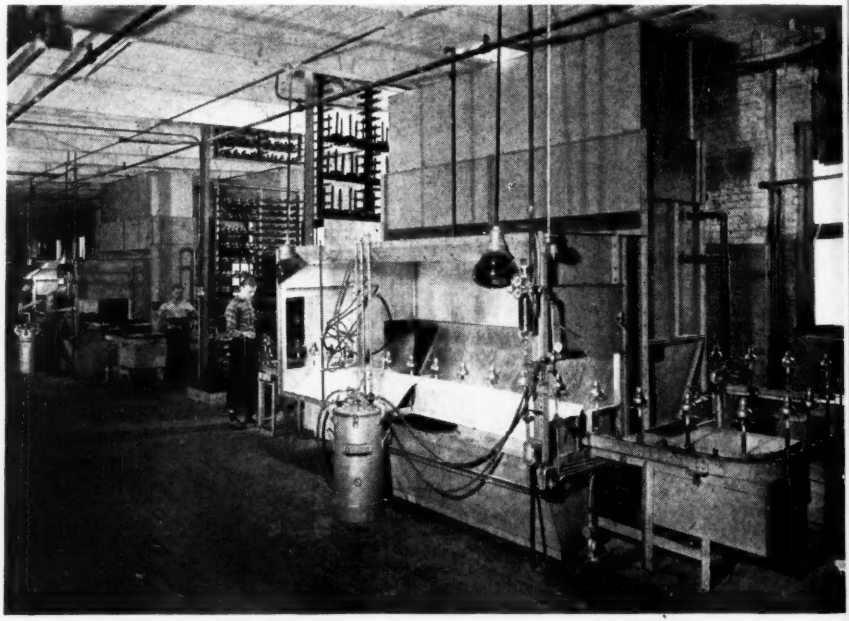
On-the-Job Training Plan for Veterans

THE Industrial Finishing Co., 1164 W. Cermak Rd., Chicago 8, Ill., has recently installed an On-the-Job-Training Program for spray painters in the enameling and japanning industry. The company, established since 1923, has long been a leader in the job-shop metal-finishing field in the Chicago area.

The program outlines in detail the various phases of training that veterans will experience on the job and fulfills an established company policy of hiring and training young men from within the community. Under the plan, veterans of World War II are afforded the opportunity to enter a skilled occupation under the guidance of experienced instructors and craftsmen. Aiding in the program are representatives of paint manufacturers, company officials, and representatives of paint spraying equipment manufacturers. While in training, veterans receive Government subsistence varying in amounts as determined by the particular dependency status of the veteran.



Departmental view showing conveyorized spray booths and mechanized equipment used at Industrial Finishing Company for training GI's in modern methods and techniques of spray painting

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ACP is now in position to exploit and develop further its patented ACP COLD SPRAY-GRANODINE (peroxide-zinc phosphate) coating process. Already many of our former customers have readopted it, and more are planning to change in the near future to get the savings of this low temperature process that produces a hard zinc phosphate bonding coating on which the highest paint luster can be obtained. It protects the lustrous beauty of the paint finish — and the metal as well. A GRANODIZED product gives assurance of the quality of the paint finish.

Another ACP product — THERMOIL-GRANODINE — is again available to produce wear resistant phosphate coatings on friction bearing surfaces

Quality products that are "GRANODIZED" with ACP COLD SPRAY GRANODINE; "DURIDIZED" with ACP DURIDINE 210B; or "CROMODIZED" with ACP CROMODINE are *Certified for Rust Resistance.*

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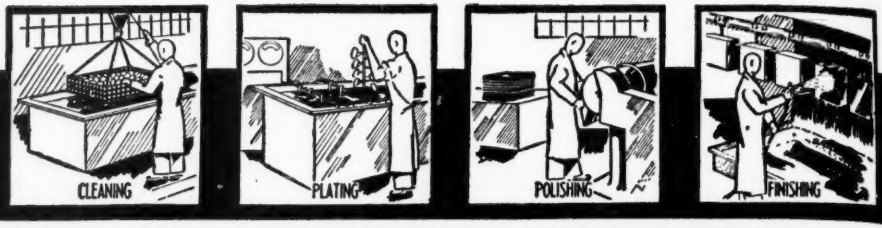


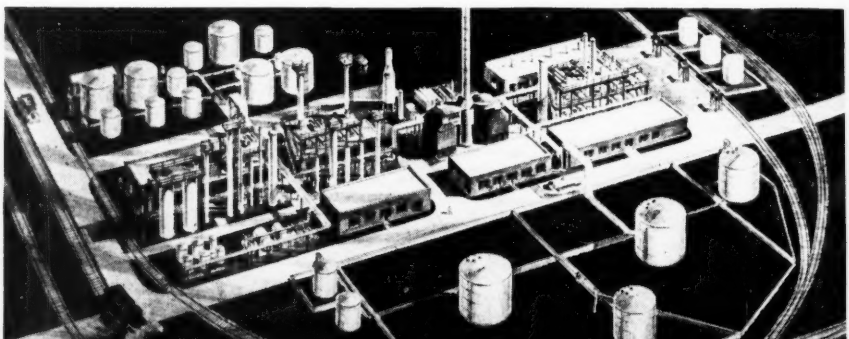
News of the Industry

Wyandotte Chemicals $25,000,000 Expansion Program

$25,000,000 will be spent by Wyandotte Chemicals Corporation in additions and enlargements to its present plants within the next eighteen months, according to an announcement by E. M. Ford, president. The improvements will make Wyandotte, already one of the world's largest manufacturer of industrial inorganic chemicals and specialized cleaning materials, an important factor in the organic field.

One phase of Wyandotte's expansion in the organic field will be the erection of a new synthetic detergent plant. Another organic unit representing an investment of several millions of dollars, and already under construction, will supply materials to the commercial chemical field.

In addition to the installation of these facilities for production of new products by Wyandotte, new plants will be erected to increase production of chlorine, calcium carbonate, and soda ash. Improvements in the present method of producing caustic soda will also be a feature of the expansion program and will



Sketch of glycol plant to be included as part of Wyandotte Chemicals expansion program

increase the output of this chemical.

Vitally important to the expansion program will be the installation of new facilities which will approximately double the present steam and power production. Expansion of staff is proceeding hand in hand with plant enlargement. Important additions to personnel have been made in the J. B. Ford Division headed

E. M. Ford

by vice president C. B. Robinson, and the Michigan Alkali Division under vice president Bert Cremers. Technical Service, the department concerned with customer guidance in the use of industrial chemicals, has been expanded. Research and Development staffs, as well as the Engineering Department, have also been increased.

W. Stewart Clark Retires

The retirement of W. Stewart Clark as manager of manufacturing for the General Electric Company's nationwide Appliance & Merchandise Department, and the appointment of Carl M. Lynge, general works manager of the G-E Bridgeport plant, to succeed him, effective August 1, have been announced by H. L. Andrews, vice president of the company and general manager of the A & M Department.

Mr. Clark's retirement rounded out 47 years of active service with the company, 26 of which were spent as executive head of the Bridgeport Works. He entered the services of General Electric in August 1899 as a draftsman in the Schenectady Works, and came to Bridgeport in May 1920, when he was appointed Bridgeport Works manager.

Mr. Lynge, who had already assumed part of Mr. Clark's duties in January 1 of this year when the latter relinquished the position of Bridgeport Works manager, will take over the complete responsibility for general manufacturing activities in all the A & M Department's plants throughout the country. He will also continue as manufacturing operations head of the Bridgeport Works and all branch plants.

Mr. Lynge joined the General Electric Company's Test Course in Schenectady, N. Y., and Pittsfield, Mass., after graduation from Yale University in 1912 with a B.S. degree in electrical engineering. During the next seven years, he was a design engineer on large electrical apparatus, worked in the company's cost and production departments, and finally headed up motor manufacture in Pittsfield.

Transferring to Bridgeport in 1920 when General Electric established operations there, Mr. Lynge served as manufacturing engineer in the fractional horsepower motor division. Three years later he became assistant to the works manager, then executive engineer of the works. In 1929, he was appointed assistant works manager, and in 1945 was given the additional title of assistant manager of manufacturing for the Appliance and Merchandise Department.

New Director of Research for Mitchell-Bradford

The Mitchell-Bradford Chemical Co., 2446 Main St., Stratford P. O., Bridgeport, Conn., has announced the appointment of Robert T. Sammet as director of research. Mr. Sammet is a graduate of Union College, Schenectady, with special graduate training at Syracuse University and also the Institute of Paper Chemistry at Appleton, Wisconsin. He was employed by Crane & Company, Dalton, Mass., as a control and research chemist until the outbreak of the war. Mr. Sammet spent 3½ years in the Navy as a lieutenant and upon his release, the latter part of last year, became associated with The Mitchell-Bradford Chemical Company.

Mr. Sammet will assume the duties of supervising the development of new products and further improvement in the standard Mitchell-Bradford lines.

McCracken Appointed to New Post

The Detrex Corp., Detroit, Mich., announces the appointment of Dr. William L. McCracken, recently discharged from the U. S. Army Engineers with the rank of lieutenant colonel, to the position of

Dr. William L. McCracken

administrative assistant to C. F. Dinley, Sr., vice president in charge of research and engineering. Dr. McCracken's new duties will provide both administrative and technical assistance to Mr. Dinley in research and production development in all of the company's three major divisions; namely, industrial metal cleaning, dry cleaning, and oil extraction.

Prior to the war, Dr. McCracken was in charge of research and development for oil extraction. He holds three degrees—B.S. (School of Mines and Metallurgy, University of Missouri), M.S., and Ph.D. (Iowa State). Dr. McCracken worked at Iowa State as a research fellow until 1939 when he first entered the Detrex organization. He is a member of the American Chemical Society and and the American Society of Oil Chemists.

Pennsalt Names Tank Car Fleet Supervisor

Vance N. Wilson, recently separated from the armed forces, has been named supervisor in charge of tank cars in the traffic department of the Pennsylvania Salt Manufacturing Company.

Mr. Wilson will supervise the maintenance and modernization and plan replacement of Pennsalt's fleet of 295 tank cars, 147 of which are allocated for shipments of liquid chlorine and the balance for shipments of aqueous and anhydrous hydrofluoric, muriatic and sulphuric acids, caustic soda, ferric chloride, peroxide, and other products. In addition, 40 leased cars for chlorine shipments will be under Mr. Wilson's supervision.

The fleet under Mr. Wilson's supervision does not include that of the Pennsylvania Salt Manufacturing Company of Washington, which maintains a separate fleet.

Edward G. Schroeder Heads New EP Detroit District Office

The Electric Products Co., 1725 Clarkstone Rd., Cleveland 12, Ohio, announces the opening of a new district office at 424 Boulevard Bldg., Detroit 2, Michigan, headed by E. G. Schroeder. This office

Edward G. Schroeder

will handle all sales and service negotiations in the territory, which consists of Michigan, northwestern Ohio, and northeastern Indiana.

Mr. Schroeder brings to his new position a broad experience in electrical sales and engineering gained by a year with the New York State Electric and Gas Corporation and over seven years with the General Electric Company.

helps to a healthy future

- **FOR YOU**
- **FOR YOUR COMPANY**
- **FOR AMERICA**

THIS TIME IT'S FOR YOU—

A booklet for employees. Explains how the payroll savings plan works . . . goals to save for.

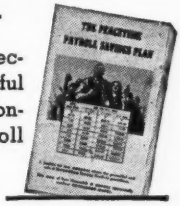
OFFICIAL APPOINTMENT—

The person appointed Savings Bond Officer for his organization is entitled to display this certificate of identification.

OFFICIAL COMMENDATION—

A certificate of commendation by the U. S. Treasury for every company operating the payroll savings plan. You can display it proudly.

THE PEACETIME PAYROLL SAVINGS PLAN—



A booklet for key executives. Contains helpful suggestions on the conduct of your payroll savings plan.

IF you're not already using these helps to a healthy future, get in touch with your State Director of the Treasury Department Savings Bonds Division. Keep up your payroll savings plan. It builds security for all!

The Treasury Department acknowledges with appreciation the publication of this message by

Products Finishing

This is an official U. S. Treasury advertisement prepared under the auspices of the Treasury Department and Advertising Council

Courses in Electroplating

The Institute of Electrochemistry and Metallurgy, Inc., 59-61 E. Fourth St., New York, N. Y., will offer specialized courses in the field of electroplating and metallurgy during 1946-47. Registration will be held for the Fall term from September 23 to 27, and the first class will be held on September 24.

The following studies will be offered: Electroplating I, a course which is designed to give the electroplater or industrial worker a foundation in chemistry, including qualitative and quantitative analysis; Metallurgy I, a course in which the student will be introduced to the structure of metals and alloys and factors are taken into account which affect these, such as temperature, mechanical work, and so on; Research I, a course designed to give the practical electrochemist a chance to investigate problems in his field.

Additions to H-VW-M Sales Force

The Hanson-Van Winkle-Munning Co., Matawan, N. J., announces the appointment of Wilfred G. Cryderman and Howard L. Wright as sales representatives.

Wilfred G. Cryderman

Mr. Cryderman is a graduate of Michigan State College with the degree of bachelor of science in mechanical engineering. His previous business connection was with the Cleveland office of Westinghouse Electric Corporation. Following a training course at Matawan, he has been assigned to the Dayton, Ohio office of the H-VW-M Company.

Howard L. Wright, who was recently discharged from the U. S. Navy in which he served as a lieutenant, has also taken an intensive field training course at the main office and plant of the company in Matawan, N. J. He is a graduate of Franklin and Marshall College and holds the degree of bachelor of science in economics, having specialized in sales and marketing. Mr. Wright has been assigned to the Philadelphia office of the company.

Howard L. Wright

Elected President of Safety Research Institute

Brahna Chalefman Hutchins has been elected president of the Safety Research Institute, Inc., New York, educational and public relations organization in various types of safety work. Mrs. Hutchins was formerly a vice president.

Other officers elected at the same time are Frank Arnoldi, vice president; Robert Nathans, vice president; and Angela B. Daniels, secretary and treasurer. The four officers were also elected directors.

Mrs. Hutchins is the author of numerous articles in the fields of fire, safety and industrial hygiene and has prepared and collaborated in the preparation of educational material in the safety field.

Donoghue Made Safety Director for Pittsburgh Plate Glass

The appointment of Thomas R. Donoghue as safety director for the Pittsburgh Plate Glass Company is announced by E. V. Ogg, director of industrial relations. Mr. Donoghue will have complete jurisdiction over the industrial safety program in the 26 plate and window glass, paint, chemical, cement, and brush plants operated by the company in 14 different states.

Associated with Pittsburgh Plate since 1920, Mr. Donoghue first served as safety and mining engineer at the company's Crystal City, Missouri glass plant. Commencing in 1925, he was safety engineer at the firm's Creighton, Pennsylvania plant for a 15-year period. He served as employment manager at the Columbia Chemical Division's Barberton, Ohio plant for 18 months.

Mr. Donoghue is a graduate of Christian Brothers College, St. Louis, where he earned the degree of B.S. in civil engineering. He is a charter member and past president of the Western Pennsylvania Chapter of the American Society of Safety Engineers. Mr. Donoghue succeeds Clarence E. Ralston who was retired recently.

Metal-Finishing Service

In order to assist manufacturers in selecting the type of plating, rustproofing, or metal finishing best suited to their purpose, The Plating Institute, 2237 Dime Building, Detroit 26, Mich., has established a committee of experts to consult with and advise those interested.

There will be no charge for this service and it is hoped that it will be used freely by all those whose products require plating or rustproofing.

New Harshaw Vice President

Waldo C. Hovey has been elected vice president in charge of research and development of The Harshaw Chemical Company, according to an announcement by W. J. Harshaw, president.

Mr. Hovey graduated from McGill University in 1916 in chemical engineering. From 1916 to 1925 he was associated with the Shawinigan Chemicals Corporation as superintendent. From 1925 to 1944 he was with the Niacet Chemicals Corp., Niagara Falls, N. Y., as general manager. From 1944 to 1946 he was manager of plant operations with Wyeth, Incorporated, Philadelphia.

THE PERFECT COMBINATION

SWENSON

- Infra Red Ovens
- Conveyors
- Dip Tanks
- Spray Booths

SWENSON ENGINEERING & MANUFACTURING, Inc.

2615 TWELFTH ST., DETROIT 16, MICHIGAN

Sales Engineering Offices:

WAGNER-GREEN COMPANY
Cleveland 15, Ohio

J. K. MUNHALL COMPANY
Buffalo 2, New York

Schwenke Appointed Service Manager

The appointment of V. G. Schwenke as service manager for the Ditzler Color Division of the Pittsburgh Plate Glass Company has been announced by William T. Utley, divisional director. Prior to his association with the Ditzler Color Division, Mr. Schwenke was associated for 11 years with the Ford Motor Company and Briggs Manufacturing Company in their automotive paint departments. When Ford's synthetic enamel operations were begun in 1933, he supervised the processing of the first units for Henry Ford's personal approval.

V. G. Schwenke

The following year, Mr. Schwenke was appointed assistant plant superintendent at the Briggs' Highland Park plant. For the past 10 years, he has been associated with the Ditzler Color Division as a service engineer.

Service Pins for Employees

At ceremonies held recently at Natrona, Pa., 116 employees with 25 years of service with the Pennsylvania Salt Manufacturing Company received awards consisting of gold pins designed from Pennsalt's familiar Quaker Keystone symbol and each containing a diamond. At the same time, certificates of membership in the Diamond Keystone Club were presented to these employees. The membership certificates carry an expression of Pennsalt's appreciation of the employees' years of loyal service.

Representative Appointed by Burns

The E. Reed Burns Manufacturing Corp., 40 Withers St., Brooklyn, N. Y., announces the appointment of Richmond B. Holmes of Baltimore, Maryland, as its Maryland and Southern representative.

Mr. Holmes, who will be located at 2001 South Road, Baltimore, Maryland, was the owner of the Holmes Electroplating Works of Baltimore, established by his father, D. R. Holmes. He has a thorough and wide experience in the operation of a plating and polishing plant and is familiar with the various methods of polishing and buffing.

Pennsalt Names Abbott Assistant Production Manager

Frederick C. Abbott, formerly manager of the New Products Division, has been named assistant production manager in the Manufacturing Department of the Pennsylvania Salt Manufacturing Company. He reports to C. S. Beldin, production manager.

Hugh Richard Bishop, recently released as a lieutenant colonel in the air forces after four years of service, has been named manager of the New Products Division, replacing Mr. Abbott. Martin E. Johnson has been transferred from the Market Research Department to the New Products Division.

Mr. Abbott, a graduate in chemical engineering from the University of Arkansas, came to Pennsalt from the Phosphate Mining Company in 1943 and previously was connected with the Ozark Chemical Company and the Texaco Salt Company. He was in the Market Research Department of Pennsalt before becoming manager of the New Products Division. He is a member of the American Chemical Society, the American Institute of Chemical Engineers, and Franklin Institute of Philadelphia.

Mr. Bishop graduated from Lehigh University and coached wrestling and taught physical education at the University of Pennsylvania before joining Pennsalt in 1939. He is a member of the Mining and Metallurgical Society and Phi Gamma Delta. He entered the Army in 1942.

Mr. Johnson, formerly with Rohm and Haas, joined the Market Research Department in 1945.

Dr. Fernelius Appointed Manager of Elyria Plant

W. J. Harshaw, president of The Harshaw Chemical Company, announces the appointment of Dr. Grant R. Fernelius as plant manager of its Elyria, Ohio, plant. Dr, Fernelius was born in Peterson, Utah, and graduated from the Ogden High School in 1931. After two years at Weber Junior College, in 1933 he entered the University of Utah where he received his B.S. in chemistry in 1935. In 1941 he received his Ph.D in chemistry from Western Reserve University, Cleveland, Ohio.

Dr. Fernelius immediately entered the development department of The Harshaw Chemical Company, finally becoming assistant chief development engineer and then assistant to the vice president in charge of manufacturing. Dr. Fernelius is a member of Alpha Chi Sigma and Sigma Xi.

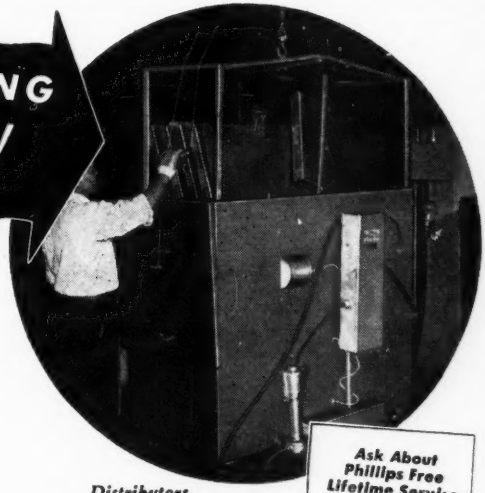
Mr. Harshaw also announces that Paul Hines, formerly manager of the Elyria plant, has simultaneously become manager of the El Segundo (California) plant of The Harshaw Chemical Company.

International Nickel Opens Texas Technical Section

The International Nickel Company, Inc., announces the opening of the Texas Technical Section of its Development and Research Division, which is located in the Bankers Mortgage Building, Houston, Texas. It will furnish to industry technical information and assistance relating to alloys containing nickel. The Section's activities will cover the states of Texas, Oklahoma, Louisiana, Mississippi, and the southern half of Arkansas.

R. J. Rice, metallurgical and chemical engineer, will be in charge. Mr. Rice was associated with the Beaumont Iron Works Company from 1923 to 1938 where he was responsible for the operations of its metallurgical department, melting shop, heat-treating department and specifications for steels and irons. Later he became associated with the Metal Goods Corporation of Houston, Texas, where he held the position of foundry engineer and metallurgist. He directed his activities toward the use of nickel in iron and steel foundries and the industrial application of nickel alloys.

METAL CLEANING *Simplified!*



PHILLIPS VAPOR DEGREASERS *give you*

- √ **68% greater flushing action.**
- √ **66⅔% less evaporation loss.**
- √ **Reclaims solvent while working . . . No shutdowns.**
- √ **Plug in and start work . . . No installation.**
- √ **Safest cleaning . . . Lowest toxicity.**

Distributors in Principal Cities

Ask About Phillips Free Lifetime Service Policy

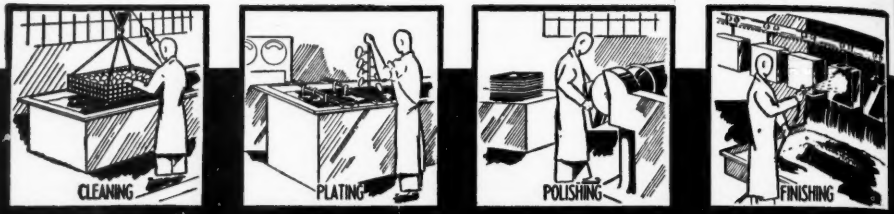
Using **PHILLSOLV...** The Safe, High Efficiency, Premium vapor degreasing solvent.

Manufacturers of a Complete Line of Metal Cleaning Machinery

PHILLIPS MANUFACTURING CO.

3461 W. TOUHY AVE. CHICAGO 45, ILL.

finishes that aid in appearance and utility



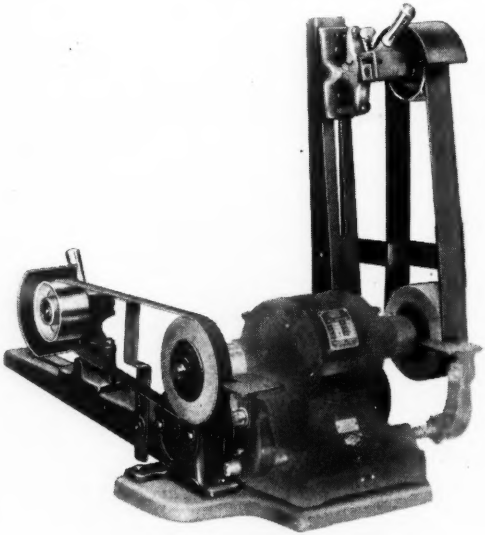
New Equipment and Materials

Porter-Cable Type N-2 Light Belt Grinder Attachment

The Porter-Cable Machine Co., 300-7 Wolf St., Syracuse 8, N. Y., announces a light, narrow belt grinder attachment, designated as the Type N-2, for use in performing all kinds of light burring and grinding operations. Combining the versatility of platen grinding with the economy and speed of contact grinding, it is said to be ideal for the light grinding of flats, arcs and angles, gear burring, weld grinding, cleaning up operations, and so on, on a wide variety of composition and plastic materials, as well as steel, iron, aluminum, wood, and glass.

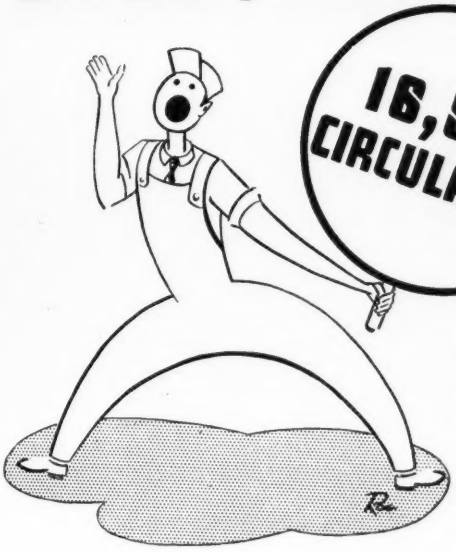
Claimed to be especially useful in toolrooms, sheet metal shops, pattern shops, garages, electrical shops, assembly, repair and maintenance departments, or in any type of industry where light grinding and finishing operations are required, the Porter-Cable Type N-2 Grinder Attachment is furnished without motor and can be quickly aligned and attached to the familiar bench type wheel grinder to which a resilient contact roll has been fitted. The complete unit assembly stands 27 inches high with a width of 2½ inches. The 6x7-inch T-shape base is drilled with 3 holes for convenient mounting to bench or work table. Platen size for flat grinding is 2 x 4 inches. Resilient contact rolls 2 x 6 or 1 x 6 inches can be furnished.

Equipped with an endless abrasive belt 2 x 48 inches, the attachment can be used either in a vertical or horizontal



Porter-Cable Type N-2 Light Belt Grinder Attachment

STOP, LOOK, READ



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Prudent buyers of advertising who want their advertising dollars to work hardest for them are selecting PRODUCTS FINISHING to carry their messages.

Write for advertising rates.

PRODUCTS FINISHING

431 MAIN STREET
CINCINNATI 2, OHIO

White Model MO-46B Vapor Steam Cleaner

White Model MO-46B Vapor Steam Cleaner

A vapor steam cleaning machine for cleaning road, construction, railroad, marine and production machinery, auto and truck bodies and engines, airplane fuselages, tanks, and vats and for stripping paint has been announced by the White Engineering & Mfg. Co., 120 W. Passaic St., Rochelle Park, N. J. Designated as the Model MO-46B, the machine is manufactured either as a stationary unit with base, a movable unit with casters, or as a trailer-carried unit.

Features of the equipment include two easily accessible valves which enable one man to operate the machine. The pressure, once set, is automatically controlled throughout the cleaning operation. Adjustment of the mixture is made possible by one of these two valves, which permits regulation from full concentration of cleaning compound to clear vapor for rinsing.

Another feature of the unit is a system of instantaneous electric ignition which enables a working pressure of 100 lb. to be rapidly reached. Operating pressures range from 75 to 125 p.s.i., with normal pressure being 100 pounds.

A special sootless down-draft burner and extra long flame travel allow for ideal combustion, completely eliminating deposits of unburned fuel on the heating coils, it is claimed. Heating coil design permits easy removal of individual coils, and the coil arrangement provides for maximum heating efficiency.

plane or any position (angle) between the 90 degrees. The attachment is said to provide for unusually fast cutting as well as cool and vibrationless operation. Belt changing can be effected in a minimum of time.

GOLD PLATING SOLUTIONS

In All Colors

Guaranteed 100% Pure Gold Content
Troy Weight - Color Constant
Tarnish Resistant
Proven Quality by the Acid Test

Write or call our experts about your plating problems

Davis-K-Products Co.
114 Lexington Ave., New York 16, N. Y.
Lexington 2-7360
2-5816

Mr. Electroplater—You have been searching for years for an additive that would harden and render your silverplate tarnish resistant, at a reasonable cost. HERE IT IS . . .

GRANIUM CYANIDE

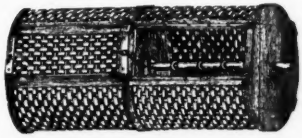
Write for new booklet describing this and other products.

GRANIUM PRODUCTS

2616 DOWNEY ROAD **LOS ANGELES 23, CALIFORNIA**

"Chemical Engineers Since 1905"

Inexpensive, light in weight.
Easy to install and operate.



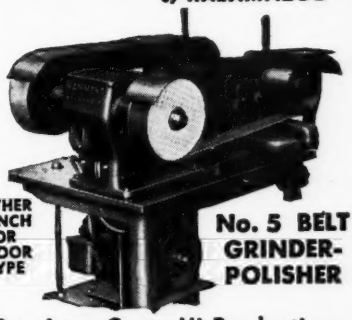
King White-Oak Plating Barrel

becomes a sub-anode, thereby producing a cleaner, brighter plate. Less plating time is required to put on the desired thickness of plate.

Send for catalogue and specification sheets.

JOHN KING 48 SPRINGFIELD ST. DAYTON 3, OHIO

Hammond . . . . *of KALAMAZOO*



EITHER BENCH OR FLOOR TYPE

No. 5 BELT GRINDER-POLISHER

For Low Cost, Hi-Production Grinding, Polishing, Buffing, Deburring and Brushing. Write for Bulletin.

Hammond Machinery Builders
1622 DOUGLAS AVE., KALAMAZOO 54, MICHIGAN

Get the Most With Electroplating! R-A Variable Platers For Every Use

Left: Rectifier basic unit, no meters, no controls, no stepless variable auto transformer.

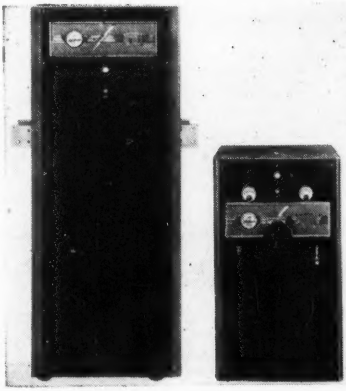
Units may be used without controls for applications where regulation of output is not necessary.

All basic units employ "on" and "off" control.

Meters may be incorporated into basic units if desired.

•

Combinations also for 12/6 volts, 18/9 volts, 250/500 amperes, 500/1000 amperes. Motor-driven remote controls for 1500 amperes and above.



Right: Remote control unit with meters and stepless variable auto transformer immersed in oil to withstand acid fumes.

This last feature permits continuous control of output from no-load to full-load.

Use of remote control system allows various combinations of controls and units for difficult applications.

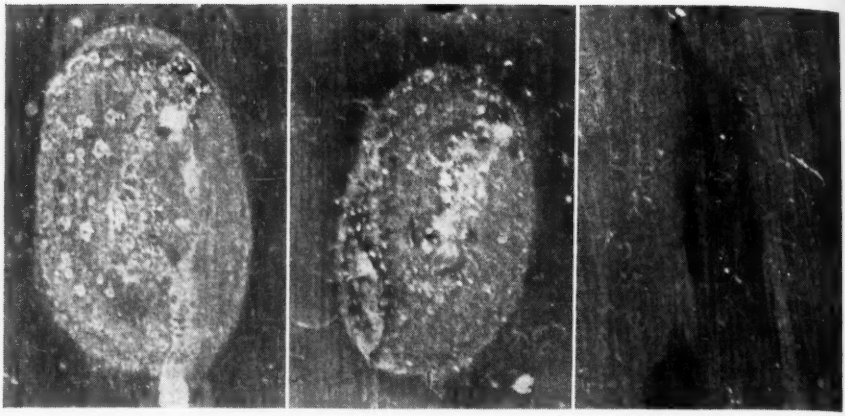
•

Write today for the R-A way — descriptive literature on a complete line of Custom-Built Rectification for your special applications.

Rectifier Division

RICHARDSON - ALLEN CORP.

15 West 20th St., New York 11, N. Y.



(Left) Fingerprint contaminated panel protected with slushing oil. (Center) Fingerprint contaminated panel protected with conventional rust preventive. (Right) Fingerprint contaminated panel protected with Tectyl 472

All operating parts of the machine are one sub-assembly, which can be easily removed for maintenance. Air-cooled location of motor of extra large capacity assures cool operation of the unit. The lightweight cleaning gun is balanced to obviate tiring of the operator, 25 feet of special oil-resistant steam hose being provided for use with the gun.

The White Model MO-46B Vapor Steam Cleaner is designed to burn No. 1 fuel oil, kerosene, or light oil. It can be used with any high grade steam cleaning material of standard make. A time and money-saving feature is introduced by injecting cleaning compound into the steam beyond the pump. This is said to prevent residue from fouling the pump, impairing efficiency, and consuming valuable maintenance time.

The steam cleaner is standardly equipped with a ½ h.p., 110-volt, 60-cycle a.c. motor and 5-foot drop cord. Motors of other voltages for either alternating or direct current are available on special order. The cabinet of the unit measures 18 x 43 x 36 inches. The overall size is 18 x 48 x 48 inches, and the weight of the unit is 550 pounds.

Tectyl 472 Fingerprint Remover

A combination fingerprint suppressor, fingerprint remover, and temporary rust preventive to be known as Tectyl 472 is now being marketed by the Freedom-Valvoline Oil Co., Freedom, Pa. Applicable by the dip, spray, or brush method, the product is described as a low viscosity solvent cut back rust preventive which provides a transparent thin film of 0.0002 inch. It is said to have a coverage of 1,500 square feet per gallon and

Those Perfect Partners For Pickling

NEP and SUMFOAM

• TO SAVE ACID IN PICKLING •

• TO PREVENT FUMES •

THE WM. M. PARKIN CO. • 1102 HIGHLAND BLDG.

PITTSBURGH 6, PA.

can be removed with petroleum solvent or alkali cleaner.

Tectyl 472 Fingerprint Remover may be used as an undercoat for heavier types of rust preventives; after cutting oil operations as a water displacer and temporary rust preventive; in slushing or spraying ferrous or non-ferrous metals so as to not only render perspiration and fingerprint residues inactive but also to remove these contaminants.

M & W "Prismlac"

A lacquer enamel which air dries to prism-like formations, to be known as "Prismlac," is announced by the Maas & Waldstein Co., 438 Riverside Ave., Newark 4, N. J. The coating is said to produce unusually attractive crystallizations on steel, aluminum, brass, copper, and other materials.

Prismlac is available in a variety of colors, including black, red, maroon, and green, and is also obtainable as a clear finish.

Mallory Rhodium Plating Process

The development of a rhodium plating process whereby unusually heavy deposits with the desirable hardness, brilliance, and corrosion resistance inherent in metallic rhodium can be obtained has been announced by P. R. Mallory & Co., Inc., Indianapolis 6, Ind. Moreover, the process, which is claimed to provide an enlarged field for rhodium in both the jewelry and industrial fields, is said to assure freedom from shadows, pinholes, and blisters.

Glidden One Coat Fine Hammerloid

Glidden One Coat Fine Hammerloid, a practical and economical medium for producing a hammered-type finish on a wide variety of products, is now being marketed by The Glidden Co., Cleveland 2, Ohio. The material can be applied with conventional spraying equipment and baked, providing a serviceable finish with but one coat.

Glidden One Coat Fine Hammerloid is available in range of beautiful colors, enlivened by an attractive metallic effect. Delicately textured, it is said to be ideally adapted to small type products such as radios, cabinets, kits, moldings and instrument panels, but is also claimed to be excellent on larger articles.

For all plating solutions

SPARKLER HORIZONTAL PLATE FILTERS

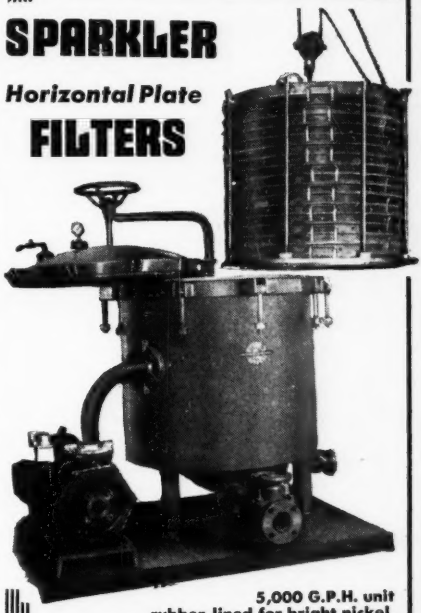
(continuous or intermittent operation)

SPECIFIC MATERIALS for SPECIFIC SOLUTIONS

SPARKLER

Horizontal Plate

FILTERS



5,000 G.P.H. unit rubber-lined for bright nickel. (Plates also removable individually by hand.)

- **Large filtering area for continuous operation.**
- **Compact—unit shown occupies 44" x 66".**
- **Uniform, high quality filtration.**
- **Easy cleaning.**
- **Leakproof, pressure-tight.**
- **Use either powder or pads.**
- **Low operating cost.**

Details on request.

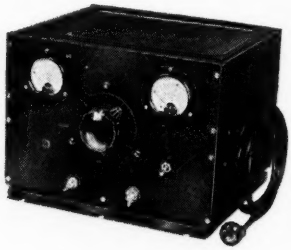
SPARKLER Mfg. Co.

255 Lake St., Mundelein, Ill.

Electro-Tech Variable Voltage Rectifier

A variable voltage rectifier which permits d.c. power to be instantly obtained without warm-up by merely plugging into a 110-volt a.c. source is now being manufactured by the Electro-Tech Equipment Co., 119 LaFayette St., New York 13, N. Y. Variable d.c. voltage is obtained by rotating a large knob located on the front panel of the unit, and selected voltage is indicated on a large (3½-inch) d.c. voltmeter.

Economical to operate and conservatively rated, the Electro-Tech Variable Voltage Rectifier is of the convection-cooled, full-wave bridge selenium type and provides for powerstat continuously variable voltage control from zero to maximum. The design includes a 3½-inch d.c. ammeter to indicate output current; 3½-inch voltmeter to indicate output d.c. voltage; panel mounted fuse; on-and-off switch; pilot lamp; rubber cord and plug.



Electro-Tech Variable Voltage Rectifier

The rectifier is available in several models. The No. 101, which measures 10 x 14 x 11¾ inches overall, has an input of 115 volts, 60 cycles, an output of 12 volts, d.c., and a capacity of 25 amperes. The No. 102, which measures 10 x 14 x 11¾ inches overall, has an input of 115 volts, 60 cycles, an output of 12 volts, d.c., and a capacity of 50 amperes. The No. 103, which measures 28 x 16 x 13½ inches overall, has an input of 115 volts, 60 cycles, an output of 8 volts, d.c., and a capacity of 150 amperes. All models are continuously variable.

Clean Spray Booths

Spray BOOTHCOTE on clean booth.
Paint peels off in sheets.
NO SCRAPING—SAVE TIME and LABOR
Trial offer 5 gal. $5.50 F.O.B. Buffalo
Used by 2000 leading manufacturers.
MONEY BACK IF NOT PLEASED.
Write for Circular.
HYGRADE FOOD PRODUCTS CORP.
HARRIS SOAP—BOOTHCOTE DIV.
19 Stetson St., Buffalo 6, N. Y.

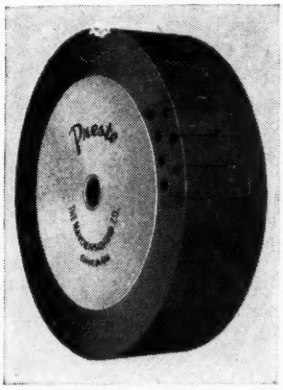
ALLWOOD
"Vienna Brand" Lime
Made from Limestone that is identical in chemical analysis and geological structure with European Imported Lime. Tests show a "lime cake" made from Allwood "Vienna Brand" Lime equals the finish made from imported lime.
WRITE FOR FULL PARTICULARS
ALLWOOD LIME COMPANY
Manitowoc • Wisconsin

For a real good polishing job use
KEYSTONE EMERY
TURKISH — NAXOS — AMERICAN
KEYSTONE EMERY MILLS *Write for Sample* **4316 Paul St., Phila., Pa.**

"Presto" Contact Wheel

The elimination of clogging of abrasive belts with resultant increased production and longer belt life is an advantage claimed for the "Presto" Contact Wheel now being offered by The Manderscheid Co., 810 Fulton St., Chicago 7, Ill. The wheel consists of specially constructed Neoprene rubber vulcanized to a metal core. The tough, resilient rubber affords a uniform yielding quality for conformation to the work, thus assuring fast, uniform polishing, the manufacturer states. Complete freedom from hard spots is said to eliminate the possibility of burning.

A patented design of the contact wheel



"Presto" Contact Wheel

provides for snapping of the belt as it leaves the work, thus beating it clean with 72 hammer strokes per revolution of the wheel. The abrasive belt is thereby kept clean so as to cut effectively until the abrasive is worn off rather than clogged up.

The Presto Contact Wheel is available in one diameter of 14 inches and in 2, 3, and 4-inch face widths. Two or more wheels can be used together in forming any desired face width. The wheel is offered in three degrees of resiliency; namely, medium, hard, and soft. Medium is said to be suitable for 90 per cent of polishing jobs, whereas hard is recommended for snagging and other course-grained work. Soft is intended for plastics as well as extremely soft metals.

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A heavy cast anode for chromium plating that provides:

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2. A novel design that provides considerable edge length and provision for solution circulation.
3. A heavy hook that makes positive screw contact and which can be used over and over again.

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Does not powder or flake.

JUST DAUB IT ON—
And, when loaded with overspray deposit—
JUST STRIP IT OFF as easy as peeling a banana.

Stop worrying about your spray booths—send in today for 5 gals. of

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DOSTER & CO.

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StaSafe Eye Mask

By means of a process in which plastic lenses are individually injection molded, the StaSafe Eye Mask now being manufactured by the Standard Safety Equipment Co., 232 W. Ontario St., Chicago 10, Ill., is said to offer all of the toughness of pliable plastic in an optically perfect lens. Wide vision lenses are molded to a correct 6.00 curve for natural vision sight without obstruction, reflection or distortion, and are made purposely roomy enough to be worn over corrective glasses when necessary. Lens replacement can be effected quickly and simply.

StaSafe Eye Mask

Non-flammable and extremely light in weight, the StaSafe Eye Mask, which weighs 1¾ oz., is attractively designed to a precision curve that is said to comfortably fit all average facial contours. The all-plastic construction provides for cleanliness and sanitation. A pliable plastic head band and adjustable buckle assure proper fit to any required head size, while special air vents on both sides of the mask provide constant cross ventilation as a precaution against fogging. The eye mask is available with either clear or eye-resting green-tinted lenses.

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STAINLESS STEEL POLISHING COMPOUNDS

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Produces Oxidized finishes on COPPER, SILVER or BRASS plated work.

Provides chemical control of oxidizing solution. Simple, easy to use.
Sample on request.

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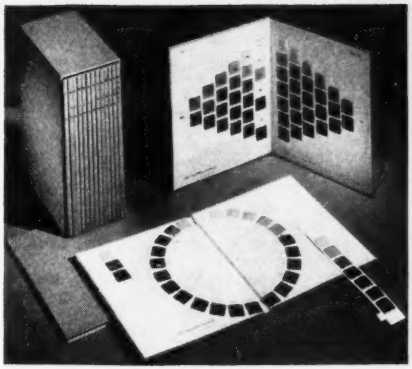
Color Harmony Manual

Of interest to all persons who work with color is the publication of a Large Chip Edition of the Color Harmony Manual by Color Laboratories Division, Container Corporation of America, 111 W. Washington St., Chicago 2, Ill. In the manual, the individual color chips are 1-inch square plus a tab, providing two and one half times more working area than the chips in the first, 1942 edition. Among the obvious advantages of the larger working area of the chips are the increased speed with which a visual impression of a color is gained, and the ease with which color matching is accomplished. Also, the necessarily larger charts (11 x 18¾ inches when open) are more appropriate for teaching and for presenting color schemes before groups.

The shape of each chip provides a tab on which is printed the complete Ostwald notation for that color. All chips are removable from their positions which are marked accordingly for easy return. Furthermore, the location of any Ostwald notation is evident from a glance at the transparent flyleaf which is printed with all letter notations. The chips in both editions of the manual are identical in color.



Color Harmony Manual

A feature of the Large Chip Edition is a work chart in which the chips may be arranged for study in circular or linear series. Also included is a 24-page text which has been revised from the original text where more exact wording seemed appropriate. It explains the basic Ostwald principles of color order in non-technical language and tells how to use them to obtain harmony in color.

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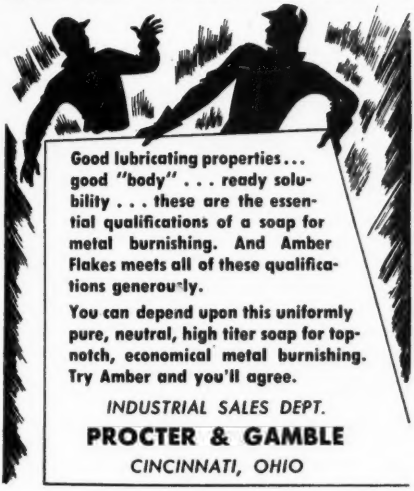
for efficient, economical
METAL BURNISHING!



Good lubricating properties... good "body" . . . ready solubility . . . these are the essential qualifications of a soap for metal burnishing. And Amber Flakes meets all of these qualifications generously.

You can depend upon this uniformly pure, neutral, high titer soap for top-notch, economical metal burnishing. Try Amber and you'll agree.

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Opportunity Section

SITUATION AVAILABLE for a man qualified as demonstrator and finisher—both wood and metal. Should be capable of assuming charge of a Finishing Laboratory, handling routine and special finishing problems involving primarily panels and articles of merchandise sent in by our customers and prospects. Age — from 28 to 40. Permanent future for the right man. Reply stating experience, training, age and other pertinent information, etc. Write Box 92, Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

PLATING BUSINESS FOR SALE

Owner will sell all or part interest of a going concern located in midwest and operating 16 hours per day.

Plant equipped for all types of plating. All equipment new in past two years and geared to production. Have plenty of work but have personal reasons for leaving the state. Address Box 93, Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

WANTED — Sales Engineer, 35-45, by nationally known manufacturer of Automatic polishing and buffing equipment, to travel mid-west territory. Require man having mechanical ability and wide experience with all types of polishing and buffing wheels, compositions for metal and plastic desirable, but not required. Permanent position with excellent opportunity for qualified man. Please state age and experience in first letter. Write Box 91, care of Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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One type L-4 or type L-8 Acme Automatic polishing and buffing machine. Must be in good condition.

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FOR SALE—Steel plating tanks. 20 assorted sizes, some lead lined. Maxon - Premix burners and other plating room equipment and various spray booths. General Lamps Manufacturing Company, Elwood, Indiana.

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WANTED: Color matcher. Must be experienced on Industrial Finishes. Good pay. Good working conditions. Permanent. Northeast location. Write giving full particulars, age, experience and salary expected. Write Box 99, Products Finishing, 431 Main Street, Cincinnati 2, Ohio.

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Low Voltage Motor-Generator Sets—New and Rebuilt

Advise Your Requirements

ELECTRIC EQUIPMENT CO.
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R40 Hi-Heat Infra-Red Lamp

Made of special heat-resisting glass so as to reduce the hazard of breakage caused by thermal shocks, an infra-red lamp desibnated as R40 Hi-Heat is now being introduced by the Radiant Lamp Corp., 300 Jelliff Ave., Newark 8, N. J. According to the manufacturer, the lamp is especially desirable for use in drying ovens containing volatile fumes, assuring uninterrupted production as a result of minimum lamp replacements.

R40 Hi-Heat Infra-Red Lamp

The Hi-Heat Lamp utilizes R40 bulbs and is available in 250 and 375-watt sizes.

Neilson Export Metalprep

The Neilson Chemical Co., 6564 Benson St., Detroit 7, Mich., now has available a highly concentrated grade of Metalprep for export use, especially packed in standard export shipping crates.

According to the manufacturer, the material should be of special interest to all companies having foreign operating branches in connection with removing rust from sheet metal surfaces and preparing metal for paint.

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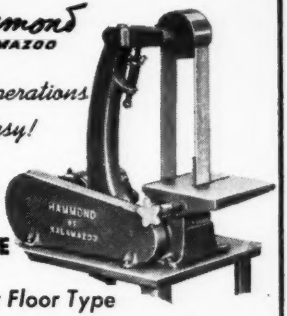

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Grinding, Polishing, Deburring, Chamfering on irregular or regular shaped parts, also eliminate costly hand filing operations!

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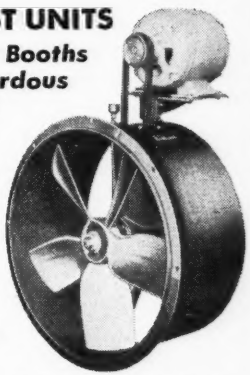

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The Finishing Touch — **By J. A. Patterson**

"She operated this machine during the war — You don't mind if she takes you under her wing and shows you the ropes, do you?"

StaSafe Eye Mask. A four-page illustrated folder providing descriptive and price information regarding its newly improved StaSafe All-Plastic Eye Mask is now being issued by the Standard Safety Equipment Co., 232 W. Ontario St., Chicago 10, Ill. Copy free upon request.

"Quick, Accurate Pickling Tank Tests with Ferro Pickle Pills" is the title of a four-page folder issued by the Ferro Enamel Corp., 4150 E. 50th St., Cleveland 5, Ohio. The contents describe an "on the spot" check available for determining the strength of pickling tanks and iron content of tanks. Copy free upon request.

Emulsion Technology. Revised and enlarged edition. Published by Chemical Publishing Co., Inc., 26 Court St., Dept. JF, Brooklyn 2, N. Y. 377 pages. Cloth binding, board covers. Price, $6.50.

The application of emulsions in many industries and technical processes is discussed in this carefully compiled symposium. A new section has been added on the theory of emulsions in which all current conceptions have been compared and discussed in detail; the reader is given a clear picture of the viscosity, surface-film, surface-tension, phase volume, solid particles, adsorption, hydration, oriented-adsorption, o r i e n t e d-wedge, and electro-kinetic theories and of their contribution to the explanation of the various phenomena of emulsification.

A special feature of the new edition is a comprehensive list of emulsifying agents divided into the following categories: Anion Active Agents, Cation Active Agents, Non-Ionic Agents, and Miscellaneous Emulsifiers. This alphabetical list includes trade names, chemical composition, emulsion type, references, manufacturer and recommended uses of the emulsifying agents. It will be helpful to the beginner as well as to the specialist.

Besides this new information, the book includes authoritative data on methods of formulation of many practical, commercial emulsions in the fields of drugs, polishes, waxes, coatings, paints, and so on. It also provides helpful information concerning the patent literature on emulsions.

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Bright Nickel Process

Produces Brilliant Adherent Nickel Deposits. Ideal Base for Chromium.

No color buffing • No re-cleaning • No re-racking • No special solutions. Merely add to cold nickel solution, still or mechanical • No extra equipment.

Guaranteed not to harm Nickel Solutions

Illustration shows unbuffed deposits before and after Lustrebright.

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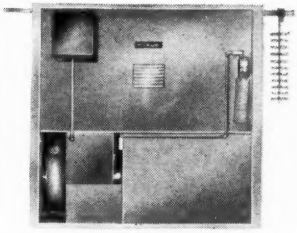

New! SPOTLESS DRYER for platers

• **Engineered to save time and money and to *produce*, the Mabor Spotless Dryer is a practical unit for platers. Its cost is a fraction of conveyorized equipment, with all of its advantaages; turning out same production in ⅓ floor space. To use, simply load and unload parts. A "one blower" machine, it blows off and finishes drying for parts on *racks*. Available, too, for parts in *baskets* and with *rocker* for *"hard to dry" parts*. Heat with steam, gas, or electricity.**

Data on request, at once.

MABOR CO. **WALNUT STREET CLARK TOWNSHIP, RAHWAY, N. J.**

CATALOGS

FOR YOUR LIBRARY

To obtain copies of the catalogs listed here, indicate on the coupon the number of the item in which you are interested and mail as directed.

1. Conveyors

Straight-line, loop-around, dual-strand, belt, and special conveyors are described and their use in a wide variety of operations and installations illustrated in an eight-page catalog published by Jensen Specialties, Inc., 9331 Freeland, Detroit 27, Michigan.

2. Cleaning Die Castings

A 12-page digest of cleaning materials and methods for the surface preparation of die castings prior to the application of chemical, organic, or electroplating finishes has been released by Oakite Products, Inc., 20 Thames St., New York 6, New York.

3. Metal Cleaning Equipment

A folder telling how seven famous companies solved their production cleaning problems is now being issued by The Alvey-Ferguson Co., 631 Disney St., Cincinnati 9, Ohio.

4. Vapor Degreasing

A handbook of questions and answers on the subject of vapor degreasing, written especially for engineers and production men, has been published by the Phillips Manufacturing Co., 3439 W. Touhy Ave., Chicago 45, Illinois.

5. Plating Rectifiers

Copper-oxide rectifiers and controls for electroplating and anodizing are the subject of a catalog issued by the General Electric Co., Section A1251-70, Appliance and Merchandise Dept., Bridgeport, Connecticut.

6. Spray Equipment

A 44-page three-color catalog published by the Eclipse Air Brush Co., 424 Park Ave., Newark 7, N. J., describes a complete line of low pressure spray equipment, including manual and automatic spray guns, nozzles, tips, pressure tanks and control heads, portable painting units, stationary compressors, and air-motored agitators.

7. Precious Metals Plating

An eight-page booklet issued by A. Robinson & Son, 131 Canal St., New York, N. Y., provides information on the development and advantages of Robinson Assayed Gold Plating Solutions and general directions for using same.

8. Conveyors for Infra-Red Layouts

The use of conveying systems in infra-red drying and baking operations is graphically described in Bulletin 150 issued by the Gifford-Wood Co., 420 Lexington Ave., New York 17, New York.

9. Solvent Degreasing

A 16-page booklet which emphasizes fundamental practices for the economical use of degreasing solvents in metal cleaning departments of industrial plants and describes typical kinds of degreasers has been published by the Detrex Corp., Box 501, Roosevelt Park Annex, Detroit 32, Michigan.

10. Lead Plating

Harshaw Chemical Co., 1945 E. 97th St., Cleveland, Ohio, has available a bulletin which describes lead plating with

Products Finishing

CLEANING
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SEPTEMBER • • 1946

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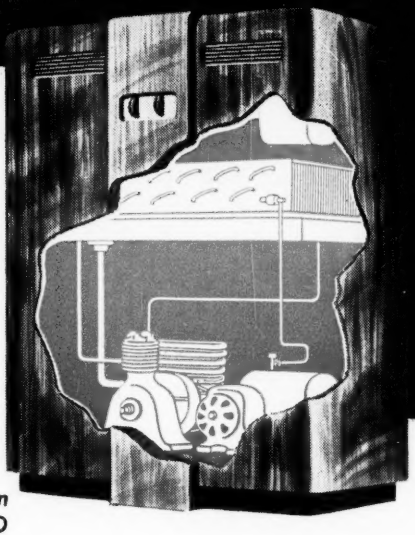

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Imagine how many uses can be found for a metal finish that can take temperature changes ranging from minus 40°F up to plus 200°F—and not break down!

Well Roxaprene can—and does! And that's not all . . .

Just look at Roxaprene's other characteristics . . .

- **Air dries—fast (or can be baked at low temperatures)**
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What's your finishing problem?

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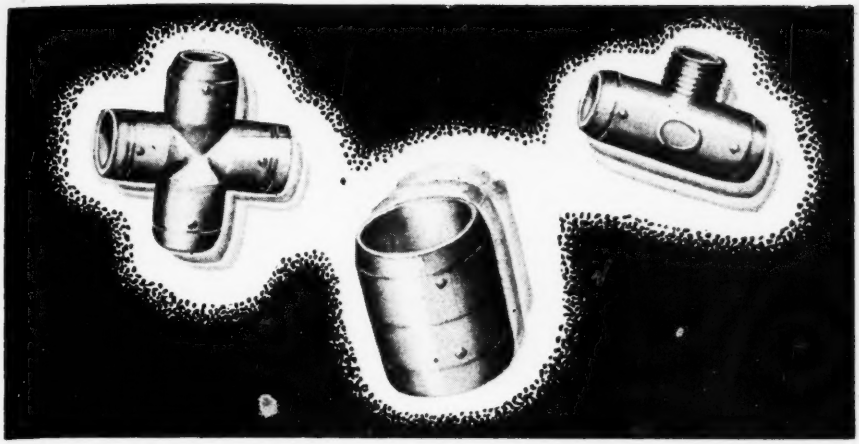

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To save time in cleaning and substantially reduce rejects, tarnish brass or other copper-alloy work by means of the OAKITE OXBRITE PROCESS. This unique reverse-current cleaning process deliberately produces a controlled tarnish on buffed surfaces, then uniformly acid-strips the oxidation.

OAKITE OXBRITE PROCESS

IMPROVES adherence of bright nickel, chrome, cadmium or other plating finishes

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PRESERVES the lustre of highly finished surfaces

PERMITS direct bright-nickel plating of soft soldered brass pieces without first copper plating.

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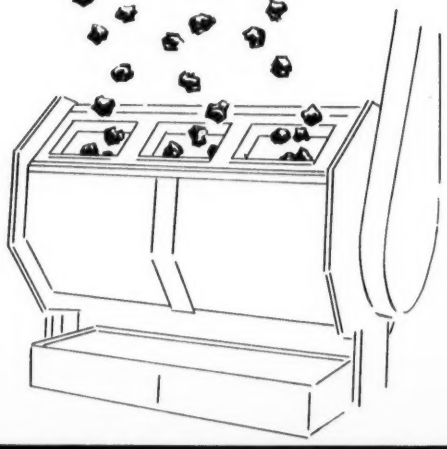

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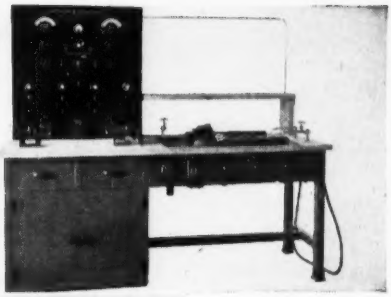
A COMPLETE PLATING LABORATORY in miniature



★ for routine solution control
★ for exacting research work

Chemical analysis of plating solutions is not enough—especially with today's high current density bright-plating processes. Alone, such analysis cannot fully indicate the quality of deposits that can be expected. As a supplement to chemical analysis, to enable platers to effect corrective measures that will eliminate faulty final deposits, H-VW-M has developed—and now offers—

THE DIGGIN ELECTROPLATING CONTROL TABLE

Test panels can be plated with this new scientific control instrument under closely regulated conditions. The result of additions, impurity removal treatments, and variations in operating conditions can be closely observed—using only a few hundred milliliters of electrolyte for the tests.

Above the alberene stone working surface of the Diggin Control Table, a 36 x 36 inch control panel provides all instruments and service outlets required for electroplating tests. Current is supplied by either generator or battery. Red and green lights and buzzer signal supplement the unit's electric timer. Outlet is provided for motor-driven stirrers, hot plates, immersion heaters, and other accessories.

Additional features include two compressed air outlets; separate cleaner-control elements, heated cells for hot electro-cleaning, hot pickling and rinsing, and three unheated cells for other processing. Two stainless steel ventilation casings withdraw vapors and fumes.

Here is one of the most important adjuncts to plating control—routine or experimental—to be introduced in recent years. Write to H-VW-M for particulars.

1755

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MATAWAN, NEW JERSEY
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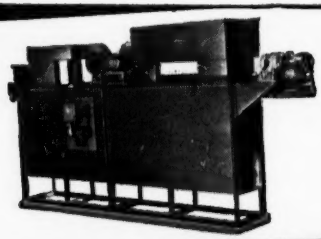

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Faster drying of metal parts on racks is accomplished with the use of the new OPTIMUS Continuous Type Drying Machine. Ideal for handling loaded racks continuously after plating, or after any water solution dip. Drying time runs 4 to 6 minutes.

This new OPTIMUS Dryer is used largely as a cold air and hot air dryer. Cold air system includes a blower and a series of nozzles. Hot air system includes an air heater, re-circulating blower, a damper to adjust the mixture of atmospheric and re-circulating air, and necessary nozzles.

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Your copy of new bulletin "Cleaning Metal Parts before and after finishing"

DEPENDABLE OPTIMUS DETERGENTS
cleaning equipment for every metal operation.

It can be used as a single stage dryer, or it can handle a number of successive operations, alkaline, acid, or neutral. Enclosed design of machine permits efficient ventilation through exhaust blower connection when desired. Can be heated by steam, gas or electricity.

An OPTIMUS Plan for the mechanized handling of your metal parts through washing, rinsing and drying, can help you save labor, reduce rejects and increase your production.

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STANDARD AND SPECIAL TYPES OF EQUIPMENT FROM THE SMALLEST TO THE LARGEST SIZES FOR A WIDE VARIETY OF OPERATIONS.

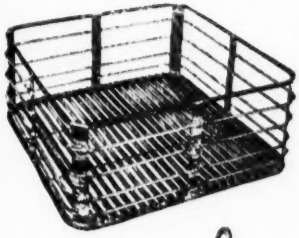
OPTIMUS EQUIPMENT

FOR WASHING · RINSING · PICKLING AND DRYING OF METAL PARTS

Specialized

MONEL BASKETS

for specialized pickling jobs



Note the variety of design in the pickling baskets illustrated here.

All were fabricated from standard mill forms of Monel.

Made by the **W. S. Tyler Company,** Cleveland, Ohio, they permit economical, trouble-free pickling of small parts.

Tough, corrosion-resistant Monel* is the logical metal for pickling use. It is readily fabricated. When welded, Monel retains its full strength and corrosion-resistant properties.

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ALL THESE BASKETS, designed and built by ***W. S. Tyler Company,*** *Cleveland, Ohio, are made of strong, tough, corrosion-resistant Monel.*

NICKEL INCO TRADE MARK **ALLOYS**

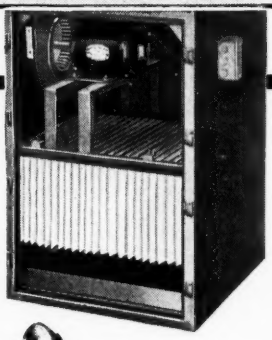
MONEL* "K" MONEL* "S" MONEL* "R" MONEL* "KR" MONEL* INCONEL* NICKEL "L" NICKEL* "Z" NICKEL*

*Reg. U. S. Pat. Off.

TORIT

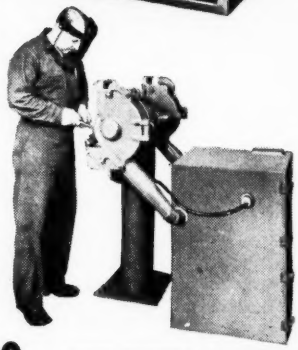
. . . DUST COLLECTORS

remove the dust menace from grinding and polishing machines.



Improve working conditions and protect valuable machinery with TORIT Dust Collectors. Attached to grinding, polishing and cut-off machines they clean the air and recirculate it back into the room.

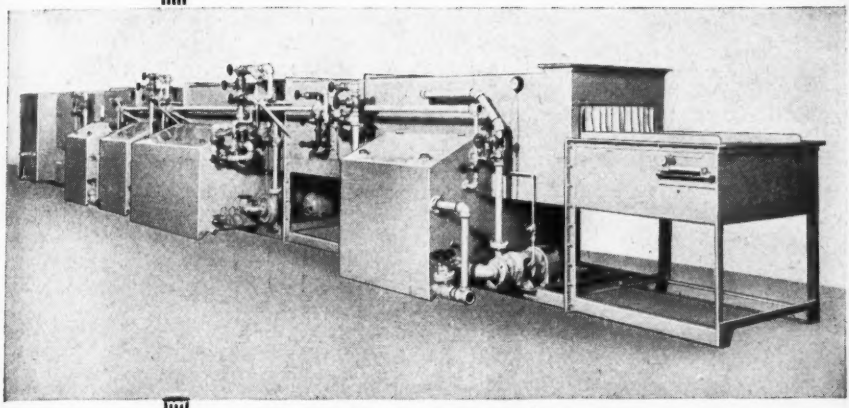
Completely self-contained, and portable, TORIT Dust Collectors are located right at the machine. There is no extensive piping. They are easy to maintain and low in operating costs. For complete information and the latest TORIT catalog write:



TORIT MANUFACTURING CO.

314 Walnut St. **St. Paul 2, Minn.**

Metalwash Model FT Bonderizing Unit



Over 20 Years Devoted Exclusively To Cleaning Problems

- For the handling of small parts on mesh conveyor.
- This machine, like all Metalwash units, furnished complete ready for services.
- No extras for valves, piping, etc.
- Standard or special designs of any type for any process.

Metalwash Machinery Co.

149-155 Shaw Avenue
Irvington 11, New Jersey

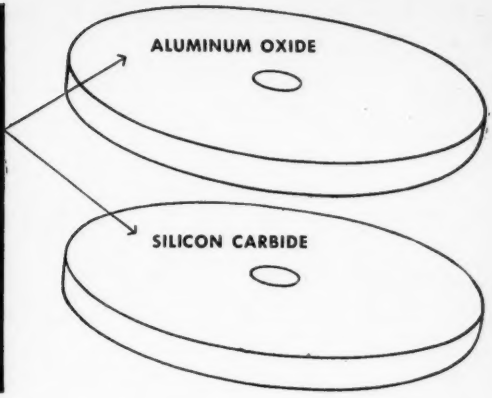
Washing, Pickling and Drying Equipment

is especially developed for that purpose. It forms a corrosion-retarding phosphate coating on iron and steel surfaces that insures better PAINT ADHERENCE of the finish to the metal. It is a newer development originating from exacting war-time requirements, and because of its superior performance is now being adopted and used by automobile concerns, refrigerator companies and metal furniture manufacturers, etc. Economical, laboratory tested, simple to control. Its demonstrated success merits your consideration. Your inquiry is invited.

NEILSON CHEMICAL COMPANY

Windsor, Ont. **6561 BENSON ST., DETROIT 7, MICHIGAN** **Los Angeles, Calif.**

Which Abrasive is right for the Job?



When adequate consideration is given grinding cost figures accounted for in wheel life, man hours, power consumption, volume and quality—selecting the best abrasive assumes new importance.

Aluminum Oxide and Silicon Carbide are the two most widely used abrasives. In many respects, characteristics of each differ widely. The degree of variation is further extended in modifications of each type.

To choose one of these types of abrasives only on the basis of the material to be ground is not enough. Other variables affect the selection. Among these are contact area of wheel and work, stock to be removed, and condition of the grinder.

To render practical aid in evaluating these and other factors, as a double check on your choice, The Carborundum Company has organized a system which many concerns depend on for improved grinding, at lower cost.

A CARBORUNDUM salesman or distributor's representative is your first contact with this system. These men can offer suggestions based on knowledge of abrasives, plus on-the-job experience.

When the problem calls for an unusual solution, one of our Abrasive Engineers is called in. A trained specialist, he is supported by the findings of the world's best known abrasive laboratories.

Because you are interested in better grinding at lower cost, it makes sense to take advantage of this practical service. Feel free to call in CARBORUNDUM. The Carborundum Company, Niagara Falls, New York.

A good rule for good grinding . . .

CALL IN CARBORUNDUM
TRADE MARK

BONDED ABRASIVES
WHEELS
Silicon Carbide
Aluminum Oxide
Diamond
Cylinder Hones
Sticks, Stones & Rubs
Specialties

COATED ABRASIVES
Paper, Cloth and Combination
Sheets, Rolls, Discs

ABRASIVE GRAINS AND COMPOUNDS
for:
Polishing
Lapping
Pressure Blasting
Finishing

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company

Du-Lite

SUCCEEDS WHERE OTHERS FAIL

Try Du-Lite's Black Chemifinish for uniform, trouble free finishing of steel parts. Du-Lite has justified its use after others have failed. Why? Because the efficiency and the easy workability of the Du-Lite Process, together with the toughness and the durability of its resultant finish, have been found most satisfactory again and again for all kinds of steel parts in regular production.

Our Field Engineer, located in your industrial area, will be glad to talk with you about your finishing problems. You can rely upon his advice and judgment. He is prepared to recommend needed processing equipment, supervise the installation, and train your men to operate it successfully.

Call or write Du-Lite at Middletown for service or further information.

DU-LITE
The Dependable Black Chemifinish for Steel Parts

DU-LITE CHEMICAL CORP.

Dept. B, Middletown, Connecticut

WHETHER YOU ARE A USER OF

SEYMOUR

ANODES

NOW OR NOT, YOU ARE WELCOME TO OUR LABORATORY SERVICE

If you are struggling with some sort of plating difficulty, such as slow corrosion, excessive sludge, peeling, porosity, brittle deposit, etc., our well-equipped laboratory and experienced staff will gladly lend a hand. In this laboratory, chemists are constantly making analyses and tests — working out short cuts wherever possible, and doing other things of present or potential value to the plating industry. Their experience is yours whenever you choose to make use of it.

A HANDY LIST OF SEYMOUR ANODES

99%+ *Rolled Depolarized* — A very fine, homogeneous, even-grained virtually pure nickel anode. Corrodes in hot or cold solutions with minimum metallic loss. Forms practically no sludge. Especially suitable for baths having a pH above 4.5 electrometric.

99%+ *Rolled Carbon* — A rolled anode of high efficiency for low pH hot Watts baths not above 4.5 electrometric. Corrodes smoothly with a minimum of loose nickel.

99%+ *Cast Carbon* — A pure nickel anode with carbon content adjusted for smooth, uniform corrosion without special controls. Available, however, with carbon content to meet any specifications. Adaptable for general shop work using hot or cold baths.

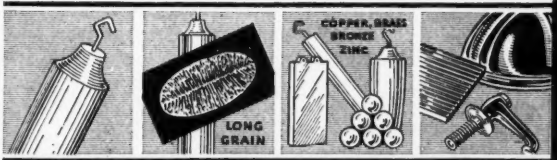
95-97% *Sand Cast* — Corrodes readily in solutions low in nickel or weak in salts — therefore suitable for cold, high pH, low current density plating solutions. Uniform corrosion throughout the life of this anode is obtained by an even distribution of the carbon content. A 90-92% Sand Cast Seymour Nickel Anode is also available.

"Seycast" — An improved type of 99%+ cast anode of very high efficiency designed primarily for Bright Nickel baths, but works perfectly in any hot Watts bath having a pH of 4.5 electrometric or lower. Corrodes evenly with practically no loose nickel formation, due to long, interlocking grains radiating from a common center. Especially suitable for high current densities.

Bright Nickel — A hot organic type process free from promoter metal, stable and easily controlled. Produces brilliant deposits from a standard hot nickel bath without the usual coloring or buffing. Excellent throwing power, wide operating conditions. Free from wetting out agents.

OTHER ANODES — Seymour Anodes in all shapes to meet rigid specifications are also available in copper, brass, bronze and zinc. The copper used is electrolytic. The zinc is always the best grade obtainable.

THE SEYMOUR MFG. CO., SEYMOUR, CONN.



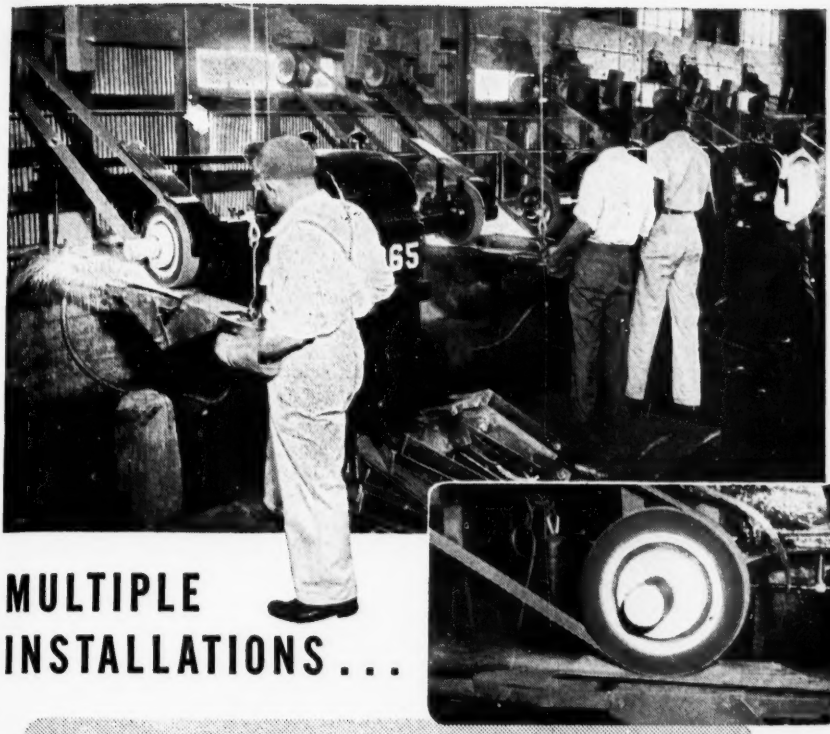
NICKEL ANODES | "SEYCAST" ANODES | OTHER ANODES | BRIGHT NICKEL

THE OSTRICH HAS NOTHING ON PLATERS WHO WON'T TRY BUNATOL 785

- The story of the ostrich may be fiction but it's a fact that the plater who won't try BUNATOL 785 is emulating the ostrich story by hiding from an opportunity to improve and increase production at lower cost.
- Made tough to withstand hot alkali cleaners, strong acid and alkali solutions and the hard usage and careless handling to which racks and fixtures are often subjected these days in decorative plating — Copper, Nickel and Chrome.
- BUNATOL 785 is a heavy-bodied, free-dipping liquid giving superior rack insulation with less labor cost. Only one material, one tank required.
- A generous test sample and further information await your request.

NELSON J. QUINN COMPANY, TOLEDO 7, OHIO

BUNATOL 785



MULTIPLE INSTALLATIONS . . .

Proof that Industry Prefers Backstands

Proof of lower cost, full quality production—convincingly demonstrated by an original trial unit—is the strongest incentive for multiple installations of any tool or method.

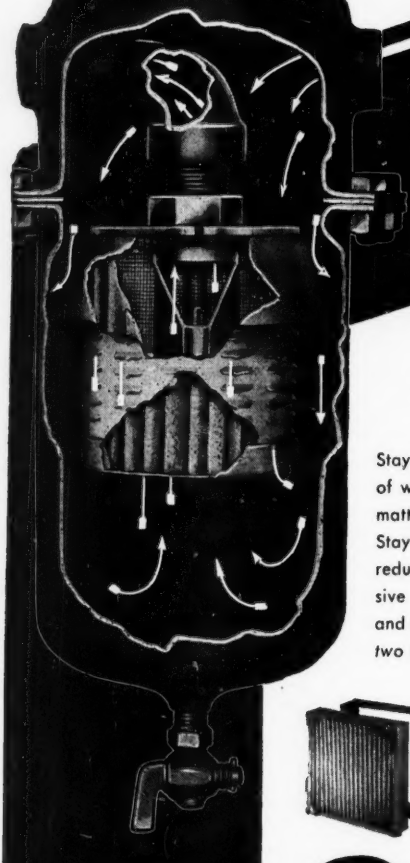
The conversion of grinding and polishing methods to factory-coated abrasive belts and idler backstands clearly demonstrates such lower cost, higher quality performance. Thus, multiple installations have marked the introduction of backstands in practically every plant whose production volume has been adequate to utilize their increased productivity.

If you find yourself asking, "Can backstands boost *our* production, too?", we have a new booklet based on seven field engineers' case studies that permits you to make this appraisal quickly by direct comparison. Write for your copy of "Production Talks Backstands."

BEHR-MANNING . TROY, N.Y.

(DIVISION OF NORTON COMPANY)

QUALITY COATED ABRASIVES SINCE 1872



CLEAN, DRY AIR

FOR PAINT AND LACQUER SPRAYING

Staynew Pipe Line Filters positively prevent passage of water, oil, pipe scale, dirt, rust, and all foreign matter. Installed as near point-of-use as possible, Staynew Pipe Line Filters increase finish beauty, reduce rejections, prevent nozzle clogging. Exclusive "double action" feature guarantees both *clean* and *dry* air . . . one Staynew Pipe Line Filter equals two ordinary units—filter and separator.

STAYNEW VENTILATION FILTERS: *For personnel and product protection. Viscous Panel and Automatic types.*

STAYNEW INTAKE FILTERS: *Prevent entrance of damaging foreign matter at compressor intake.*

COMPLETE INFORMATION ON REQUEST

Note if specially interested in: Pipe Line, Intake, or Ventilation Filters.

DOLLINGER CORPORATION

Filter Headquarters Since 1921

53 Centre Pk., Rochester 3, N. Y.

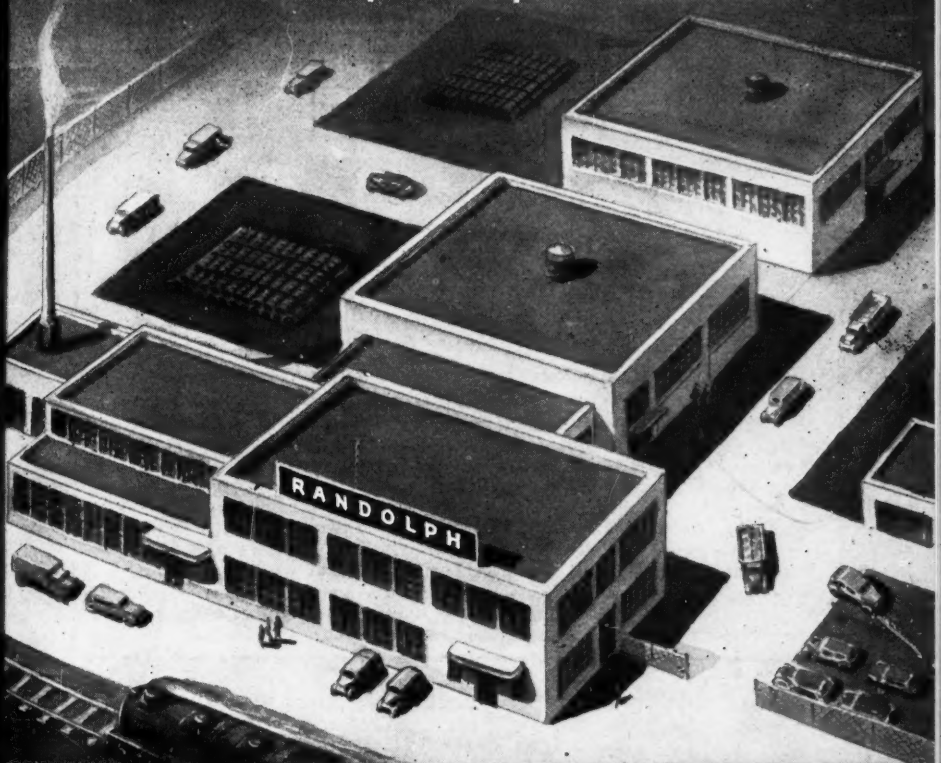
DOLLINGER PROTECTOMOTOR STAYNEW FILTERS

ANOTHER
RANDOLPH ACHIEVEMENT!

A Really Reliable

TEXTURE (WRINKLE) ENAMEL

Prompt Shipment



DOPES · LACQUERS · ENAMELS

RANDOLPH

FINISHING PRODUCTS CO.

arlstadt New Jersey

CLEANING AND CORROSION TIPS

Issue No. 5

September 1946

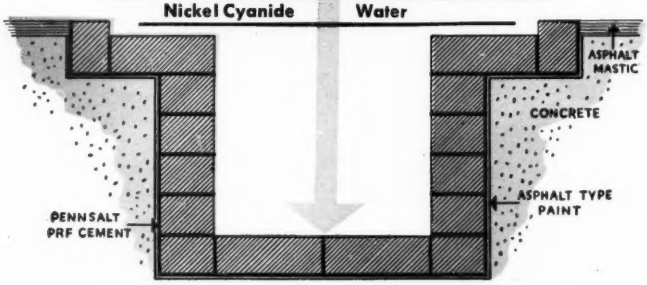
CASE NO. 938

Acid-alkali drains as good as new after 6 years... Require no repairs or maintenance

Six years ago, a large nationally-known manufacturing plant installed an acid and alkali resisting floor in its plating room, with draining troughs between the plating tanks to carry off splashes and spent contents.

These troughs—constructed of acid-proof brick laid in Pennsalt PRF Cement mortar—handle the following chemicals in various concentrations:

Sulfuric Acid at 180°-200° F.	Nitric Acid—both hot and cold
Caustic Soda—hot	Copper Cyanide
Iron Chloride	Chromic Acid
Nickel Cyanide	Water



After six years, this construction is as serviceable as the day it was put into operation; no maintenance or repairs have been required. As a matter of fact, some of the original trowel marks are still visible on the mortar joints . . . clear proof of the efficiency of the Pennsalt PRF Cement. Pennsalt PRF is a resin-type cement specifically designed for bonding acid-proof bricks in construction where resistance to many acids, alkalis and solvents is either desired or necessary.

The sketch above illustrates the details of construction of the troughs. The plating room floor was covered with a mastic—98% pure asphalt. The concrete surface of the troughs was given two coats of asphalt-type paint, then lined with acid-proof brick buttered with Pennsalt PRF Cement mortar which when hard is unaffected by most acids, alkalis and solvents.

CASE NO. 935

Work 100% better . . . cleaning time cut in half . . . less material needed

A concern was only getting fair results in cleaning 1020 deep-drawn steel parts prior to pickling and painting. The soil in question was mineral oil and sulfur drawing lubricant.

Believing that he could improve the situation, the Pennsalt Man replaced the old cleaner with a Pennsalt prod-

uct, and the work was run through the new cycle. The foreman pronounced the work "100% better"; cleaning time was cut nearly in half, and less cleaning material was needed.

This is just an example of the opportunities that come to the cleaning foreman who is constantly looking for better ways of doing things. It's also a typical example of the kind of results being achieved throughout industry by the knowledge and training of the Pennsalt Men, backed by the high-quality products in the Pennsalt line.

CASE NO. 929

Management thinks a lot of this cleaning superintendent . . . and here's why

Small parts of 1050 spring steel were being descaled and de-smutted by a mechanical grit blast, prior to cadmium plating. The grit blasting was doing a fair enough job of cleaning the work, but the superintendent realized that a better finish would improve the plating job, and he was determined to find a better descaling method.

He put the problem up to the Pennsalt Man who worked out a chemical cleaning process that would do the job. The new cycle—culminating a series of trials and errors—greatly improved the lustre of the finished work, and made possible a better plating job. Furthermore, the Pennsalt method cut descaling and de-smutting time to one-quarter of the time formerly needed, and cut cleaning costs in half.

Chemical descaling proved itself completely to the cleaning superintendent, and he presented the results to the management. The boss was so pleased that he is considering the purchase of additional equipment in order to standardize on the Pennsalt Descaling Process in his plant.

CASE NO. 911

Pennsalt Cleaner eliminates rejects

An electroplating company had been getting poor results in removing compound from polished brass prior to bright nickel plating. The superintendent had tried various cleaning processes with no improvement in finished work.

When the Pennsalt Man stopped by, he was handed the problem. After studying it carefully he added a pre-cleaning dip in Pennsalt EC-10*, and replaced the old cleaner with a Pennsalt product in the regular cycle. Results: another point for Pennsalt technical know-how and superior products. The work came through with brilliant lustre, and all rejects due to cleaning were eliminated.

*TRADE MARK—REG. U.S. PAT. OFF.

If you have a metal cleaning or corrosion problem, the Pennsalt Man can help you. If you would like to see him, write to Dept. PF-9. Or—if your problem is urgent—wire, and he will call immediately.

PENNSYLVANIA SALT
MANUFACTURING COMPANY
Chemicals
Special Chemicals Division
1000 WIDENER BUILDING, PHILADELPHIA 7, PA.
New York • Chicago • St. Louis • Pittsburgh
Cincinnati • Minneapolis • Wyandotte • Tacoma

PENNSALT
96 YEARS OF SERVICE TO INDUSTRY

We are Pathfinders for Electro-plating
WITH PRECIOUS METALS

We have been leaders in research and development in the plating field for many years, particularly in the realm of the precious metals. Our contributions to the advancement of this art have been notable—the development of the process for plating with rhodium is one outstanding instance.

Electro-plating with platinum, rhodium and gold for special applications, notably in electronics, radio, radar, telephone and other means of communication, often require research and experiment. Here is where our long experience and familiarity with the peculiarities of the precious metals will be of great value to you.

Among our precious metal products for the plater are:

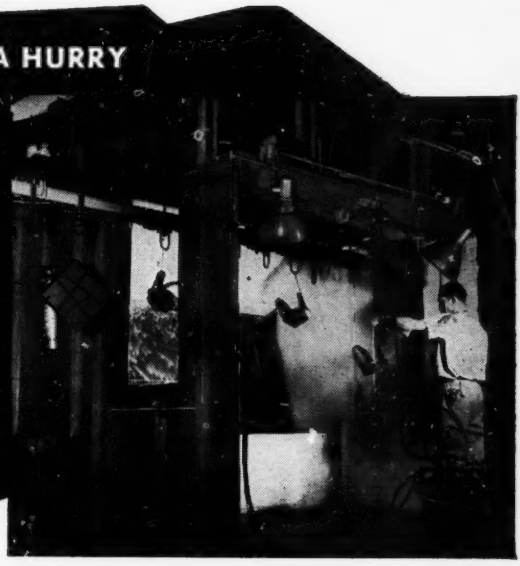
Rhodium Plating Solution
Platinum Plating Solution
Aurosal—Gold Oxide
Silver Cyanide
Potassium-Gold Cyanide 41% and 67%
Sodium-Gold Cyanide 46% and 71½%

BAKER & CO., INC.
113 Astor St., Newark 5, N. J.
NEW YORK 7 SAN FRANCISCO 2 CHICAGO 2

SPERRY WAS IN A HURRY

G-W

sliced
finishing time
in half!



Cutting drying and finishing time 50% over previous handling methods, a G-W Infra-Red System helped Sperry Gyroscope Company turn out 253,000 individual parts each 26-day working month — more than Sperry asked of the System by a substantial margin.

Designed, built and installed by G-W, the infra-red system at the Sperry plant typifies the *completeness* of G-W service. *Results* with the installation emphasize the advantages of working with an organization like G-W, whose services *are* so complete.

For better finishes faster, take advantage of the directional heat of infra-red. To best *coordinate* infra-red with continuous processing while products are in transit, take advantage of G-W's unique *dual* experience: long and close association with the development of infra-red since its earliest commercial use, *plus* G-W's 130 years of creating and installing mechanical handling equipment for industrial service of every type.

This double experience is double assurance of satisfactory infra-red performance when you give the job to Gifford-Wood. Call in a G-W representative. It may pay you well to let him study your plant and make recommendations. Gifford-Wood Co., 420 Lexington Ave., New York 17, N. Y.; 565 W. Washington St., Chicago 6, Ill.— Factory: Hudson, N. Y. Write Dept. V.

HANDLING HEADQUARTERS for Industrial Conveyors and Elevators . . . for Coal and Ash Handling Systems . . . for Ice Processing and Ice Handling Tools . . .

G-W HANDLES IT . . .
faster • easier • cheaper

GIFFORD-WOOD
SINCE 1814

784

words of approval keep pouring in!

Here are the Six Outstanding Features of

MICCROTEX

THE *New* AIR-DRY RACK COATING

- MICCROTEX is a superior thermoplastic insulating material developed by experienced platers.
- MICCROTEX meets the requirements of all plating cycles and phosphate coatings.
- MICCROTEX may be dipped, brushed or sprayed with equal effect.
- MICCROTEX is a black material with a high luster—highly resistant to plating solutions, acids and alkaline cleaners at boiling temperatures.
- MICCROTEX is tough, resilient, and flexible—attains maximum adhesion without shrinkage.
- MICCROTEX effectively minimizes dragout—is easy to use—saves time and material in application.

DEVELOPED AND MANUFACTURED BY EXPERIENCED PLATERS

MICCROTEX is blazing a new trail in plating techniques — establishing new records for speedup, efficiency and economy in rack coatings. Write for detailed bulletin.

MICCRO Products

MICHIGAN CHROME AND CHEMICAL COMPANY

6340 East Jefferson Avenue · Detroit 7, Michigan

ALPO FINISH

A BEAUTY TREATMENT THAT WEARS WELL

A sensational new polychrome development in protective coatings; a smooth, delightful sheen possessing a richness and depth characteristic only of ALPO. Note these distinctive features:

SINCE 1870

1. Casting craters and stamping seams readily concealed by the "peaks and valleys" of this unique finish.
2. One coat application by ordinary gun.
3. No exacting special bake.
4. Resistance to marring, heat, cold and humidity.
5. Over 50% greater coverage.

ALPO Finishes are ideal for modern designed household and office appliances and numerous other articles of metal and plastic.

Supplied in most pastel colors.

Only Standard makes ALPO.

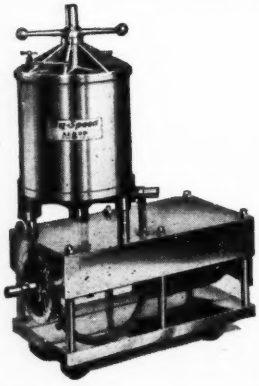
ALSOP FILTERS
for positive, trouble-free Filtration

finer finished surfaces

elimination of rejects

low production cost

There's an Alsop "*Sealed Disc*" Filter for practically every plating solution



Know Why!

The Alsop *"Sealed-Disc"* Filter was designed to meet plating room requirements—check these 4 features and "know why" so many platers insist on Alsop's *"Sealed-Disc"* Filters.

1. Completely enclosed, air-tight unit, eliminating loss through leakage or dripping. No filtering powders required, or slurry mixing tanks needed for general everyday plating work.
2. Exceptionally small space requirement. For example, a 600 gals. per hour filter complete with electric pump requires only a 9″ x 20″ floor space—a 2000 gals. per hour machine requires only 12″ x 24″ of floor space.
3. Filter discs can be changed quickly and easily even when changing from one solution to another. Anyone can do it in a very few minutes.
4. Made in sizes, with or without pumps, from 1 gal. per minute up to thousands of gals. per hour.

The *"Sealed-Disc"* Filters offer these features and many more. You can have positive, trouble-free plating. Just write for details or contact your regular plating supplier.

ALSOP
ENGINEERING CORPORATION
Filters · Filter Discs & Sheets · Mixers · Agitators
109 KEEN STREET • MILLDALE, CONNECTICUT

Polishes Tubing Many Times FASTER

Produces Uniform Finish No Spiraling Effect

Polishing tubes evenly at high speed is easy with the PRESTO Semi-Automatic Tube *Polishing* Machine. As the tube rotates it feeds automatically across the polishing wheel or belt producing a uniform finish free from the spiraling effect which is prevalent when tubes are polished by hand.

ALL OVER the country, from coast to coast, PRESTO Semi-Automatic Tube *Polishing* Machines are speeding production, avoiding spoilage and producing uniform finish not attainable in production by hand polishing.

Completely portable and adjustable, the PRESTO Semi-Automatic can be set up to any standard polishing lathe in a jiffy. You merely push the machine up to the wheel, adjust for height and to fit the tube, insert the tube and start the lathe. Total setting up time is less than five minutes.

You can polish tubes from 3/4" to 5" diameter and in any length, using PRESTO Tube Support Stands for long tubes as illustrated.

Rollers of the Tube Support Stand are adjustable to fit the tube and to coordinate with movement of tubing across the polishing wheel or belt.

Ask your Jobber or write for Bulletin 103.

Send for your copy of the new PRESTO Catalog.

The MANDERSCHEID Co.

810 Fulton Street, Chicago 7, Illinois

Serving the Metal Finishing Trade over 35 Years.

PENTRATE PENTRATE PENTRATE PENTRATE PENTRATE

THE NEW MONITOR SWEEPER

Manufactured by WHITE AIRCRAFT CORP., Palmer, Mass.

with **BLACK** by Pentrate

This sleek new MONITOR Sweeper is finished in bright blues and reds accentuated by lustrous Pentrate black. Pentrate can't crack, chip, peel or rub off. And because it imparts durability and protection as well as appearance, the inside working parts of the MONITOR have been Pentrated too! Look at your own product. If a deep, rich black, either as a basic color or as trim, would add that sales-appealing punch, write for further information.

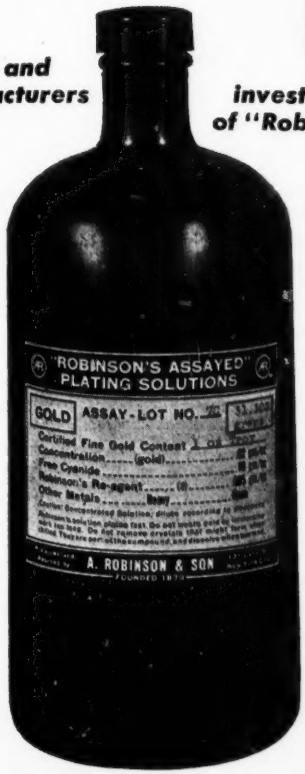
HEATBATH CORPORATION
SPRINGFIELD 1, MASSACHUSETTS
In Canada — WILLIAM J. MICHAUD CO. LTD. — Montreal

PENTRATE PENTRATE PENTRATE PENTRATE PENTRATE

Old in Years
MODERN IN INDUSTRY

Platers and Manufacturers

investigate our Products - take advantage of "Robinson's 66 years in Precious Metals"



ROBINSON'S ASSAYED (100%) GOLD PLATING SOLUTION

FIRST IN THE FIELD

Robinson's Assayed Gold Plating Solutions were the FIRST Standardized Liquid Gold Concentrates. They succeeded because critical technical buyers, in and out of the plating room, adopted them and endorsed them.

They Feature

Gold by weight, not by the quart

Continuous use of bath, through replenishment

Economy—Uniform Results

In calculating comparative costs, remember that

A Troy ounce contain 31,103 grams
An avoirdupois ounce contains 28,350 grams

And note that

Robinson's label says TROY and Robinson's Gold weights are 100%

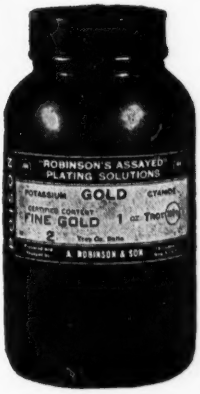
ROBINSON'S ASSAYED POTASSIUM GOLD CYANIDE

IN SALT FORM

ROBINSON PRODUCED THE FIRST STANDARDIZED LIQUID GOLD PLATING CONCENTRATE

We now give you a Standardized **Potassium Gold Cyanide in Salt Form.**

Successful in War, it has already been adopted by, and taken a place in, civilian trades. Our label will give you the guaranteed Gold weight in TROY—100%.



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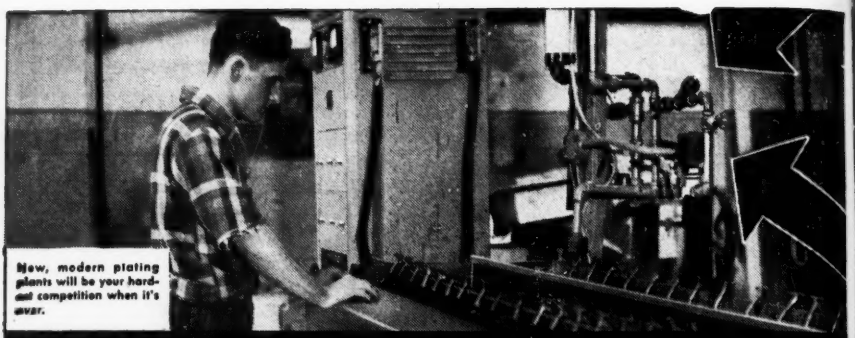
Prepared and Guaranteed by

A. ROBINSON & SON

131 CANAL STREET • NEW YORK CITY • CAnal 6-0310 - 0464 ***Founded 1879***



Did you E-X-P-A-N-D *too fast?*

The contribution of the plating industry to the war effort will never be completely told. Production was doubled and trebled overnight—without time to engineer the job for efficiency, and with many needed accessories not available.

When it is over, only the more efficient plating plants will survive. Faster plating, more automatic, more exacting tolerances and lower costs will be demanded—and obtained.

These strong statements are based on what we know has been done with Sarco in the past few years. From hot water storage tanks to simple wash tanks, and exacting chrome plating to anodyzing, there is a Sarco temperature control that is inexpensive, easy to install and simple to adjust and operate.

You can speed up production, eliminate rejects and reduce fuel costs by the addition of Sarco equipment to your present installation. The Sarco representative will study your plant — make recommendations—save you time and money without obligation.

Sarco TR 21 Control on hot water storage tank

Sarco No. 87 Control on caustic tank

Sarco Electric Control on chromium plating tank

50

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475 FIFTH AVENUE
NEW YORK 17, N. Y.
Represented in Principal Cities

SARCO Saves Steam

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Write Today For Your DATA SHEETS

ON CLEANING COMPOUNDS TO SOLVE YOUR FINISHING PROBLEMS!

MAC DERMID INCORPORATED cleaning compounds eliminate all your metal cleaning and finishing problems. Formulated and perfected to solve your specific difficulties, MAC DERMID INCORPORATED compounds are your guarantee for safety — satisfaction — superior results.

MAC DERMID

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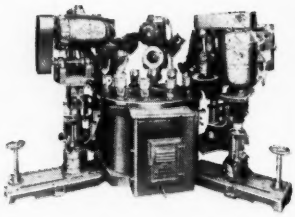
WATERBURY 88, CONNECTICUT

WRITE ONE OF THESE SERVICE ORGANIZATIONS FOR FREE DEMONSTRATION

NEW YORK	DETROIT	CHICAGO	CLEVELAND	ST. LOUIS	TORONTO—CAN.
Udylite Corp. (L. I. City)	Udylite Corp. Wagner Bros.	Udylite Corp. Geo. A. Stutz Mfg. Co.	Udylite Corp. McGean Chem. Co.	LaSalco, Incorporated	Clark Industrial Supplies Co.



No. 2-12 PACKER-MATIC ROTARY INDEXING TYPE
(also built continuous)

There's a Packer-Matic for all shapes, metals and finishes. WRITE for Factory Time Study—SEND part and finish desired to Packer Machine Co., Meriden, Ct.

"I don't bet on hand operations—I've installed PACKER-MATICS."

Hand-operations are costly on any job, whether it's the old shell game or polishing and buffing work. Packer-Matic automatic polishing and buffing machines eliminate most free-hand operations . . . insure high quality finish . . . lower both labor and wheel costs. Keep your polishing and buffing department up to date—install Packer-Matics, now!

THE PACKER MACHINE CO. MERIDEN, CONN.

PACKER-MATIC

AUTOMATIC MACHINES FOR BUFFING, POLISHING, DEBURRING AND GRINDING

DESPATCH

$1,500,000 IN FINISHING EQUIPMENT DESIGNED, BUILT, SHIPPED and INSTALLED in FIRST 6 MONTHS of 1946!

DESPATCH OVEN, gas fired. Part of a typical Despatch Finishing System for rust proofing and finishing refrigerators and food cabinets.

Proof that...

DESPATCH can supply the oven you need *Now!*

This production record was possible because DESPATCH has . . .

- **Ample production facilities**
- **Large, experienced engineering staff**
- **Extensive inventory of materials**
- **Efficient, well-organized personnel**

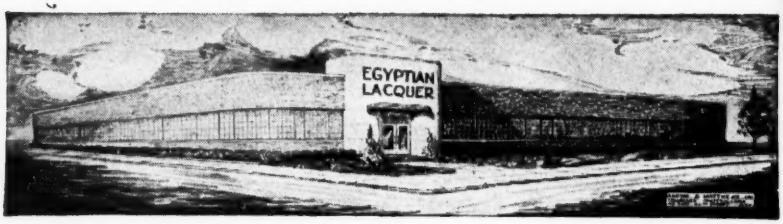
. . and outstanding customer cooperation.

That's why DESPATCH *can* supply your Finishing System or oven *now*. Helps you get into finishing production *weeks ahead of your present estimates.*

WIRE OR WRITE at once if you want a Despatch Engineer to call.

DESPATCH OVEN CO., 611-13 S. E. 8th St., Mpls. 14, Minn.

DESPATCH OVEN COMPANY MINNEAPOLIS 14 CHICAGO 1



New Egyptian Building at South Kearney, N. J.

Sales, advertising and accounting departments of Egyptian Lacquer Manufacturing Company have moved into a modern home recently erected on the company's factory site at South Kearney, N. J.

The new structure, in proximity to Egyptian's laboratory and manufacturing facilities, increases our ability to serve you. Please note the new address and mark your records accordingly.

Executive headquarters remain at Rockefeller Center, New York City.

THE EGYPTIAN LACQUER MANUFACTURING COMPANY
JACOBUS AVENUE, SOUTH KEARNEY, N. J.
MAIL ADDRESS—P. O. Box 444, NEWARK, N. J.

EGYPTIAN FINISHES

EGYPTIAN
SPECIALIZED PRODUCTION FINISHES

Harshaw fluoborate lead solution concentrate—suggested uses, solution preparation, equipment and procedure.

11. Metal Parts Washers

A 28-page book descriptive of metal parts washing machines engineered by G. S. Blakeslee & Co., Chicago 50, Ill., is now available from this firm.

12. Rodine

A standard control for fast, efficient, economical pickling—"Rodine"—is the subject of a descriptive folder now available from the manufacturer, American Chemical Paint Co., Ambler, Pennsylvania.

13. Industrial Ovens

The Kirk & Blum Manufacturing Co., 2816 Spring Grove Ave., Cincinnati 25, Ohio, has prepared an informative booklet on the various types of industrial ovens designed and installed by this company to meet individual requirements in product finishing.

14. Cobalt-Nickel Plating

Complete details on three cobalt-nickel plating processes for use in connection with household appliances, automobile bumpers and trim, tools, toys, metal furniture, and so on, are contained in a 12-page bulletin issued by the Hanson-Van Winkle-Munning Co., Matawan, N. J.

15. Chemifinishes

General information concerning the chemical finishing of metals together with detailed data on Du-Lite Chemifinishes for steel, brass, copper, and zinc is contained in a portfolio prepared by the Du-Lite Chemical Corp., Middletown, Connecticut.

16. Metal Parts Cleaning

An illustrated bulletin describing equipment and detergents for modern metal parts cleaning operations is now being offered by the Optimus Equipment Co., 133 Church St., Matawan, New Jersey.

17. Iridite

A panel of Iridite-treated zinc plate is included in a folder distributed by Rheem Research Products, Inc., 14811 Standard Oil Bldg., Baltimore 2, Md., which discusses Iridite easy-to-apply corrosion-resistant agent that unites chemically with zinc or cadmium surfaces.

18. Infra-Red Lamps

The Wabash Appliance Corp., 345 Carroll St., Brooklyn 31, N. Y., has prepared a booklet on infra-red lamps and listing many of their uses.

19. Aluminum Treating Process

"Alumox," a chemical process for producing corrosive-resistant coatings on aluminum alloys, is described in a four-page illustrated brochure issued by The Enthone Co., Dept. PF, 440 Elm St., New Haven 2, Connecticut.

20. Lubrizing

"Parco Lubrizing," a simple chemical treatment for producing on wearing surfaces, without the use of electric current, a non-metallic oil absorbent coating that is said to permit rapid break-in of moving parts without scoring or scuffing and reduce subsequent wear, is described in a technical bulletin published by the Parker Rust Proof Co., 2172 E. Milwaukee Ave., Detroit 11, Michigan.

21. Product Finishes

A folder now being offered by the Interchemical Corp., Finishes Division, Empire State Bldg., 350 5th Ave., New York 1, N. Y., describes metal finishes, can and drum linings, cable finishes, household paints and specialties, and so on.

22. Metal Fluoborates

Technical Information Manuals ZF-1 and LTF-1 providing information respectively on zinc fluoborate concentrate and lead and tin fluoborate for the electroplating industry are now available from the General Chemical Co., 40 Rector St., New York 6, New York.

Print plainly in filling out coupon for literature.

PRODUCTS FINISHING
431 Main St., Cincinnati 2, Ohio

I am interested in receiving the following literature reviewed in your September issue.

No...... **No.**..... **No.**..... **No.**..... **No.**.....

(Insert numbers denoting literature you want.)

Name ..... Title.....

Company .....

Company Address .....

City ..... State.....

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DURANITE

The Production Finish

withstands scratches and marring

DURANITES pass rigid scratch and mar resistance laboratory tests — tests that make normal consumer wear and tear fade into insignificance.

DURANITE is a heat-reactive, plastic-base finish that's really tough! It has excellent adhesion; resists abrasion, humidity, checking, fats and oils, soap and water. DURANITE is fast-curing, comes in white, clear and a variety of *lasting* colors.

The test illustrated is only one of many used by Zapon to make sure that DURANITE meets your requirements. Ask the Zapon Representative about DURANITE.

A RIGOROUS TEST

Finished panel is pushed beneath the rounded stylus under pressure of weights which are increased until the finish is stripped off or meets desired standards of mar resistance.

Scratch Resistance is measured by using pointed needle for stylus and increasing the weight until the finish is ruptured. In this way comparison and evaluation of finishes can be accurately estimated.

One of a series of advertisements showing how Zapon tests assure better finishes.

TEST NO. 4

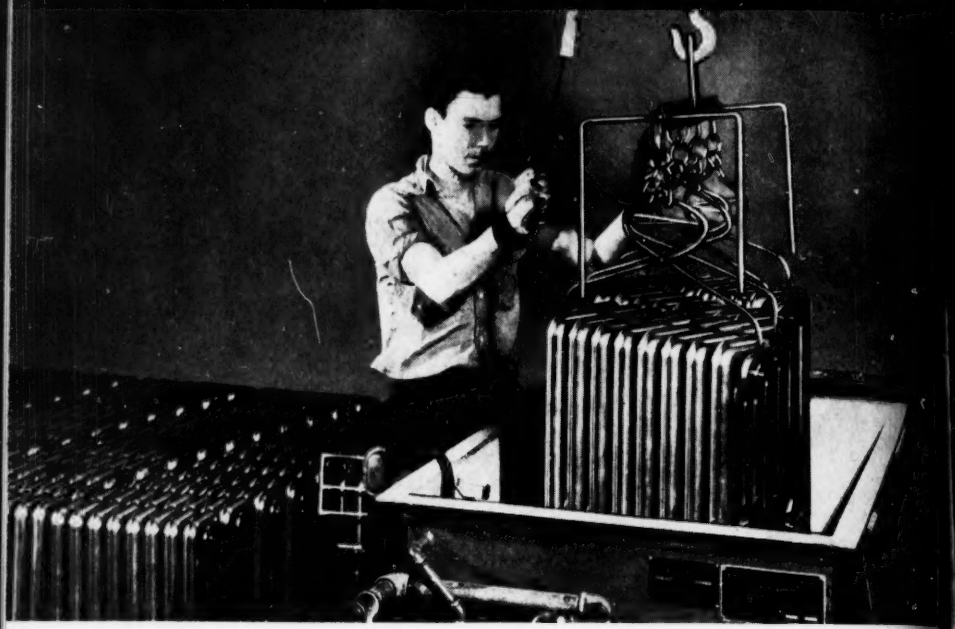
ZAPON DIVISION
ATLAS POWDER COMPANY

Complete Manufacturing . . . Research . . . Sales

Stamford, Conn. North Chicago, Ill.

SPECIALIZED PRODUCTION FINISHES . . . *Doing Tomorrow's Job Today!*

DETREX METAL CLEANING



The Short-Cut To Better Finishing

Durable, attractive product finishing has a pre-requisite of proper metal cleaning.

Research in Detrex laboratories coupled with Detrex field experience, has made available to industrial finishers a complete source of technical data and the necessary products leading to the ultimate in metal cleaning.

Detrex field representatives analyze factors in each plant to determine the pre-finishing cleaning process most suitable to use. Because they represent a company marketing a complete line of metal-cleaning equipment and chemicals, their recommendations are unbiased.

For complete information on solvent vapor degreasing, PERM-A-CLOR and TRIAD degreasing solvents, metal parts washers and TRIAD ALKALIS and EMULSIONS, call a Detrex field representative today.